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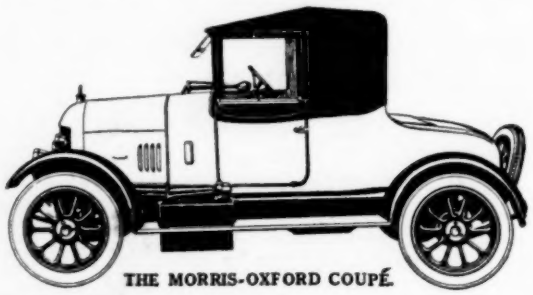

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CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT.

OBSERVATIONS on a County Venereal Diseases Scheme: the Defects in Administration. By J. J. BUTTERWORTH, M.D., D.P.H.. 1041

A LECTURE on Acetonæmia and Volvulus of the Small Intestine in Childhood. By F. JOHN POYNTON, M.D., F.R.C.P..... 1045

ORIGINAL ARTICLES.

Some Cases of Aleukia or Aplastic Anæmia associated with Thrombopenia. By S. C. DYKE, M.D., M.R.C.P., D.P.H.—*(Illustrated)*.. 1048

The Indications for Operative Treatment in Cases of Pulmonary Tuberculosis. By H. MORRISTON DAVIES, M.D., M.Ch., F.R.C.S... 1051

The Spore-forming Bacterium on Rice-grains used by Families Suffering from Beri-beri and Epidemic Dropsy. By Prof. S. R. BOSE, D.Sc., F.L.S. 1054

A Case of Spondylitis Deformans in a Kinkajou. By N. S. LUCAS, M.B., Ch.B.—*(Illustrated)* 1055

Unusual Cutaneous Metastases in Carcinoma of the Breast. By W. D. NEWCOMB, M.B.—*(Illustrated)* 1056

MEDICAL SOCIETIES.

Royal Society of Medicine: Section of Psychiatry: The Law Regarding Criminal Responsibility of the Insane..... 1057

Tuberculosis Society of Great Britain: Tuberculosis of the Urino-genital Tract 1058

REVIEWS AND NOTICES OF BOOKS.

History of the Great War. Medical Services, General History. Vol. III. By Maj.-Gen. Sir W. G. Macpherson... 1060

Orations and Addresses. By Sir John Bland-Sutton 1060

Venereal Disease: Its Prevention, Symptoms, and Treatment. By Hugh Wansey Bayly, M.C. 1060

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Quarterly Journal of Experimental Physiology 1061

REPORTS AND ANALYTICAL RECORDS.

Bynogen.—Energen Bread.—Atoquinol Tablets and Ointment. 1062

LEADING ARTICLES.

THE APPEAL IN THE HARNETT CASE 1063

PYORRHŒA ALVEOLARIS . 1063

NEW FACTS IN THE ÆTIOLOGY AND TREATMENT OF MALARIA 1065

HOSPITAL COÖRDINATION IN BIRMINGHAM 1065

ANNOTATIONS.

The First Dental Board.. 1066

Forensic Problems of Lethargic Encephalitis 1066

The Surgical Treatment of Pulmonary Tuberculosis 1067

Hospital Beds for Children in South London 1067

Effect of Pathological Sera on Plain Muscle.. 1068

The Cassel Hospital for Functional Nervous Disorders 1068

A Canadian Symposium on Cancer 1068

Criminal Responsibility of the Insane 1069

Isolation of Lepers 1069

New Methods at Buxton. 1070

The Coming Voluntary Hospitals Conference . 1070

Radiography of the Pylorus 1070

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LXXII.—The Treatment of Bilharzia Disease. By Dr. J. B. CHRISTOPHERSON 1071

MEDICINE AND THE LAW.

Harnett *v.* Bond and Adam: Judgment of the Court of Appeal. 1072

SPECIAL ARTICLES.

The Surgical Treatment of Cancer of the Breast: Third Memorandum of Departmental Committee of Ministry of Health 1074

Imperial Social Hygiene Congress at Wembley, May 12th–16th.—*(Concluded)* 1075

The New Natural Baths at Buxton.—*(Illustrated)* 1076

Royal United Hospital, Bath: Opening of Private and Orthopædic Wards.—*(Illustrated)*.. 1078

United States of America: Cyanogen Chloride for Fumigation 1079

Infectious Diseases in England and Wales during the week ended May 10th, 1924..... 1080

THE SERVICES.

Royal Naval Medical Service.—Royal Army Medical Corps.—Royal Air Force.—Deaths in the Services. 1080

CORRESPONDENCE.

The Manchester Radium Institute (Dr. Arthur Burrows) 1081

Bathing and Ear Disease (Mr. Walter Edmunds) 1081

The Psychology of Vertigo (Dr. W. H. B. Stoddart)..... 1081

Points in the Administration of Insulin (Dr. O. Leyton) 1082

MEDICAL NEWS.

University of Cambridge. 1082

University of Oxford: Radcliffe Prize 1082

University of Paris 1082

Royal College of Surgeons of Edinburgh 1082

The late Dr. W. Scowcroft, of Cheadle Royal 1059

Aberdeen University Club 1082

Federation of Medical and Allied Services 1083

Chadwick Public Lectures 1083

Royal Sanitary Institute 1083

Milk-supply to Hospitals. 1083

Fellowship of Medicine and Post-Graduate Medical Association .. 1083

Brussels Medical Congress 1083

Royal Microscopical Society 1083

Dublin: the Hospitals and the Gas Strike .. 1083

Co. Galway Health Scheme..... 1083

Donations and Bequests. 1083

The late Mr. Walter Thompson 1083

North-Western Tuberculosis Society 1084

Conference on Science and Labour 1084

Medical Examination of Young Persons for Factory Employment . 1084

PARLIAMENTARY INTELLIGENCE.

House of Lords: Criminal Responsibility (Trials) Bill.—Tramways and Waterloo-road Hospital 1084

House of Commons: Vivisection (Prevention of Public Expenditure) Bill.—Cost of Insurance Administration.—Infectious Disease Grants.—Maternity and Child Welfare Grants.—Final Pension Awards.—Tuberculosis in the Navy.—Death-rate in Gold Coast Colony 1086

NOTES, COMMENTS, AND ABSTRACTS.

Our Clothes and Health.. 1089

Public Health in Ceylon. 1089

Health Conditions in Swaziland and the Seychelles 1090

Salford's Remedial Playground 1090

Mothercraft 1090

Opening of a New L.C.C. Mental Hospital..... 1090

Medical Diary 1087

Appointments 1088

Vacancies..... 1088

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Textile workers	183,000	317,000
Commercial occupations	140,000	72,000
Clothing and textile goods	33,000	79,000
Mining and quarrying	110,000	2,000
Building and allied trades	77,000	—
Clerks and draughtsmen	81,000	50,000
Wood, furniture, &c.	64,000	4,000
Warehousemen, storekeepers, &c.	48,000	24,000
Professional occupations	31,000	38,000
Agricultural	48,000	5,000
Public administration and defence	31,000	6,000
Food, drinks, &c.	22,000	20,000
Paper, books, &c.	21,000	16,000

Cotton Trade.—Over 1000 spinning mills employing 200,000 persons; 250,000 persons engaged in weaving and finishing cotton goods. Total population engaged in textile work, 500,000.

Coal Mining.—Twenty-five million tons mined annually in Lancashire. Estimated amount of coal still available in the county, 4,000,000,000 tons.

Stone and Ore Mining.—Stone or rock or metallic ores mined annually in the county, 3,750,000 tons. Persons engaged in mines and quarries, 112,000.

Agriculture.—Total area of county, 1,200,000 (approx.) statute acres. Area cultivated, 800,000 acres. Persons employed in agriculture, 53,000. Area of Lancashire farms, average 36·5 acres.

SYNOPSIS OF COUNTY SCHEME.

(A) *Treatment Centres.*

Arrangements for the treatment of venereal diseases have been made by the county council with 22 hospitals and three ad hoc clinics in the geographical county. These treatment centres, with one exception, are situated in the county boroughs and are not evenly distributed geographically, being mainly in the thickly populated areas of south-east Lancashire. The residents in many of the rural and smaller urban districts have to travel considerable distances for treatment. There are several other hospitals in the administrative county which might be used for the treatment of venereal disease, but it has not been possible, for various reasons, to make suitable arrangements.

Table I. is a synopsis of the work carried out in the treatment of residents in the administrative county at the centres since the beginning of the scheme in 1918:—

TABLE I.—*Number of Persons Resident in the Administrative County* who have Attended the Treatment Centres.*

Year.	No. of residents in the administrative county area attending treatment centres for the *first* time and found to be suffering from—					Total No. of attendances of county residents at out-patient clinic.	Aggregate No. of in-patient days.
	Syphilis.	Soft chancre.	Gonorrhœa.	Conditions other than venereal.	Total.		
1918	674	12	173	104	963	9,010	950
1919	1510	94	729	408	2741	22,732	2838
1920	1433	85	802	496	2816	31,096	2490
1921	1104	33	622	414	2173	32,739	2367
1922	701	17	573	399	1690	29,420	1490

* It might be well to repeat that the term "administrative county" means the whole of the geographical county, excluding the 17 county boroughs.

It will be observed that the number of patients is tending to decrease, and the average number of attendances to increase. It has been found by experience that very few children or babies are presented at these clinics.

Period of Attendance at the V.D. Clinics.—From the returns made to the County Public Health Department from certain of the venereal diseases treatment centres in Lancashire during the six years 1918–23 statistical details have been collated. It has not been found possible from the information available to include in them the large treatment centres in Liverpool and Manchester; and from certain other institutions the returns do not cover the whole period of six years. In most instances the agreements with the treatment centres are between the management of the institution and the county borough council, and the county council has to rely for statistical details on returns, often incomplete, supplied by the county borough health departments.

I have endeavoured to ascertain, from the data available, the proportion of the total persons attending clinics who *complete* the full course of treatment, or who cease to attend *before* completion of the course. The statistics here quoted refer to 23,270 persons—males 17,164, and females 6106—who attended certain Lancashire treatment centres, for which complete returns have been received, between the date of the commencement of the county scheme (1918) and Dec. 31st last year.

The following tabular statement shows, as far as the data available permit, the gross percentage of persons who actually completed the course and attended the final tests, contrasted with those who ceased to attend at various stages of treatment.

TABLE II.—(Years 1918–23.)

—	Syphilis.		Soft chancre.		Gonorrhœa.	
	M.	F.	M.	F.	M.	F.
	%	%	%	%	%	%
Persons who ceased to attend the clinic at various stages of treatment and before the *final* tests as to cure	79·3*	80·5*	57·5*	71·9*	60·7*	61·0*
Persons transferred to other treatment centres after treatment	6·4	4·7	3·6	2·2	8·9	10·4
Persons discharged from the clinic after completion of treatment and observation ..	14·2	14·7	38·8	25·8	30·3	28·5

TABLE III.—*Yearly Percentages:*—

(A) Year 1918.

Persons who ceased to attend the clinic at various stages of treatment and before the *final* tests as to cure	80·3*	78·6*	90·9*	—	68·0*	66·6*
Persons transferred to other treatment centres after treatment	—	—	—	—	—	—
Persons discharged from the clinic after completion of treatment and observation ..	19·3	21·3	9·1	—	32·0	33·3

(B) Years 1919 and 1920.

Persons ceasing to attend clinic before completing a course of treatment	45·7	46·3	23·4	41·3	45·0	52·1
Persons ceasing to attend after completion of a course of treatment, but before *final* tests as to cure	36·6	38·1	36·8	35·6	21·7	23·7
Persons transferred to other treatment centres after treatment	5·4	2·7	2·5	—	6·1	4·8
Persons discharged from the clinic after completion of treatment and observation ..	12·1	12·7	37·2	23·0	27·0	19·4

(C) Years 1921, 1922, and 1923.

Persons ceasing to attend the clinic before completing the first course of treatment ..	24·4	24·5	25·6	40·0	33·2	32·1
Persons ceasing to attend after one or more courses but before completion of treatment	30·1	30·5	—	—	1·8	1·4
Persons ceasing to attend after completion of treatment, but before *final* tests as to cure	22·4	22·5	25·1	20·0	21·2	19·7
Persons transferred to other treatment centres after treatment	7·8	6·7	6·4	20·0	10·7	13·3
Persons discharged from the clinic after completion of treatment and observation ..	15·2	15·5	42·7	20·0	32·9	33·3

* Includes a large percentage (in the case of syphilis 35 to 40 per cent.) who completed the course of treatment, but did not attend for the final tests.

Conclusions from the Tables.—As regards syphilis, approximately 50 per cent. of both sexes cease to attend at the treatment centre *before* completing the full course of treatment. During the last three years (1921–23), as compared with 1919 and 1920, there was an increase in the percentage of persons discharged from the clinics *after* completion of treatment and observation, the percentage of the sexes being equal. In gonorrhœa cases the percentage of completed attendances is higher than in syphilis.

(B) *Arrangements for General Practitioners.*

The Lancashire County Council have made arrangements by which medical practitioners practising in the administrative county area can be supplied gratuitously with the necessary outfits for collecting materials for examination from persons suspected to be suffering from venereal disease, and scientific reports upon the materials submitted are furnished to them direct by the pathologist.

The laboratories available for such examinations are:—

Liverpool: The University of Liverpool, City Laboratory and School of Hygiene, Mount Pleasant. (Prof. Beattie.)

Manchester: The University of Manchester, Public Health Laboratory, York-place, Oxford-road, Manchester. (Prof. Topley, Director.)

Burnley: The Borough Health Department Laboratory.

In addition to these laboratories, several of the hospitals carry out portions of the bacteriological work. It is not possible to state the number of patients treated by general practitioners either privately with their own drugs or with arsenobenzol compounds supplied by the county council. It would be interesting to receive from practitioners an annual return of the number of persons treated by them.

Free Supply of Arsenobenzol Compounds.—The county council supply free of charge arsenobenzol compounds to approved medical practitioners, and Table IV. shows the amount of work carried out.

TABLE IV.—*Number of Outfits and Number of Doses of Arsenobenzol Compounds Issued by County Council to Medical Practitioners.*

Year.	No. of outfits issued by county council to medical practitioners.				Result of exam. of specimens forwarded to Manchester laboratories.		Supply of arsenobenzol compounds.	
	Wass. test.	Detection of spirochæte.	Detection of gonococci.	Total.	Positive. Per cent.	Negative. Per cent.	Total No. of practitioners "approved."	Total No. of doses supplied.
1918* ..	195	10	51	256	40·14	59·86	27	269
1919 ..	405	43	62	510	43·33	56·67	65	881
1920 ..	602	18	39	659	34·01	65·99	96	944
1921 ..	951	6	64	1021	27·25	72·75	109	796
1922 ..	580	13	37	630	38·73	61·27	116	517
1923 ..	900	5	61	966	38·97	61·03	123	845

* Portion.

The addresses of the "approved" practitioners show that they are grouped for the most part around the large towns in the vicinity of the venereal disease treatment centres. The greater number of the "approved" practitioners received their training during military service. Practitioners who did not receive training in venereal disease work during the war have not, as a rule, taken up this work, as it is difficult under present conditions to spare the necessary time and money for post-graduate work. Some of these continue to treat syphilis with mercury only. In the course of my work I meet a large number of general practitioners, and those in practice in rural areas and in the smaller urban districts state that they rarely see cases of obvious venereal disease.

EDUCATIONAL WORK.

The County Public Health Department began educational work to combat venereal disease in the year 1917 by the appointment of two organisers—one male and one female—and since 1920 has continued the work mainly by the services of a lady organiser and a panel of about a dozen medical lecturers. The propaganda and educational arrangements have comprised lantern and film lectures in theatres, picture-houses, public halls, &c., talks to mothers in child-welfare centres, and lectures to men and women in clubs, works, institutes, &c. Special courses of lectures in biology have been given by a medical woman to teachers.

Table V. sets out the amount of work carried out in these directions.

TABLE V.—*Approximate Audiences Reached by Propaganda Work Carried Out by the County Council Public Health Department.*

Year.	Lectures and addresses by organising lecturers, &c.			Medical lectures.			Lectures to—		Lantern lectures.	Film lectures.	Works meetings.		Total.
	M.	W.	Mx.	M.	W.	Mx.	Teachers.	Mothers.			M.	W.	
1919	310	910	8,450	2827	4010	500	390	1275	1,890	2,300	2,160	2630	27,652
1920	1914	2,605	1,840	1350	1470	—	710	2004	6,215	3,900	8,210	5906	36,124
1921	2914	3,773	1,875	1290	725	60	350	1318	2,100	122,500	—	66	136,971
1922	—	2,725	360	750	50	200	94	805	1,450	10,820	—	—	17,254
1923	—	3,125	360	1340	—	60	540	—	520	13,400	—	100	19,445
	5138	13,138	12,885	7557	6255	820	2084	5402	12,175	152,920	10,370	8702	237,446

M. = Men. W. = Women. Mx. = Mixed.

I think it can be argued that the campaign inaugurated against venereal diseases during the last few years has already gained a great measure of success in certain directions. In my own county a considerable section of the population, by means of propaganda, has been made to realise the contagiousness and serious results of venereal disease. Table V. shows that we have brought the subject before more than a quarter of a million people during the last five years. The attitude that even the innocent sufferer should be treated as a social outcast has been broken down. Many of the infected persons, by treatment, have been rendered non-infective. The governing bodies of hospitals are beginning to realise that these diseases can no longer be neglected and that treatment must be provided. The best results have been achieved in the treatment of syphilis, particularly in the male.

The facilities in this county for treatment of infected persons are, with more or less difficulty, within the reach of all. The county council has issued, free of charge, over 800 railway vouchers to enable persons to travel from their homes to treatment centres. The campaign against the disease, however, requires development in certain directions.

The greatest defects in a number of the present schemes are (*a*) the lack of proper provision for the treatment of infected children, (*b*) the lack of proper provision for the discovery and treatment of gonorrhœa in the female, and (*c*) the difficulty of providing treatment with sufficient privacy for the respectable woman who objects to have to wait her turn in company which is often very mixed and undesirable. It is mainly with the first two defects that I propose to deal here, as, in a large number of cases the sufferers are innocent victims and therefore most worthy of treatment and consideration.

EXTENT OF THE PROBLEM.

Before discussing any administrative action it is necessary to know something of the extent of the problem.

(A) *Children Suffering from Venereal Diseases.*

These children can be divided into two classes: (1) Children of school age, (2) children under school age.

(1) *Children of School Age.*—About two years ago I instructed the medical men on my staff working in the Lancashire county schools and child welfare centres to carry out an investigation into the incidence of the signs of congenital syphilis in children attending the elementary schools. It was impracticable to use the Wassermann test in the investigation. As the result of the clinical examination of several thousands of children, I formed the following conclusions:—(*a*) That the gross manifestations of congenital syphilis in school-children resident in the rural districts of the county are very rarely seen; (*b*) that the gross manifestations of congenital syphilis are occasionally seen in the routine examination of school-children in the smaller towns (less than 0·15 per cent.); (*c*) there was some evidence that congenital syphilis, which had remained latent, was lighted up by intercurrent disease—thus, one child developed signs of congenital syphilis after measles, and another after the removal of tonsils and adenoids; and (*d*) there were certain cases, but few in number, in which the medical officers thought a Wassermann test necessary before a definite opinion could be expressed.

(2) *Children under School Age.*—The medical officers working in the county child welfare centres are unanimous in stating that they see and suspect the existence of syphilis more frequently in the babies attending the centre than in school-children, but that it is by no means a common disease in these children. They think, however, from the evidence supplied by their health visitors that the disease has its greatest incidence in the premature and ailing infants who die in the first months of life or remain too feeble and ill to attend the centres. In other words, the infected children die off and do not survive till school age. Several of the medical officers express the opinion that syphilis is frequently a cause of stillbirths.

Table VI. shows the number of stillbirths, &c., reported by midwives practising in the administrative county area:—

TABLE VI.

Year.	Total births in county area.	No. of births attended by certified midwives practising in county area.	No. of stillbirths reported by certified midwives.	Percentage stillbirths reported by midwives to total births attended by them.
1914	38,507	21,880	498	2·27
1915	34,595	20,941	392	1·87
1916	32,695	17,069	397	2·32
1917	28,420	15,592	361	2·31
1918	27,736	14,966	305	2·03
1919	28,799	16,240	381	2·34
1920	39,767	21,843	479	2·19
1921	36,558	19,566	443	2·26
1922	32,011	17,046	401	2·35
1923	30,672	15,763	359	2·27

There is a strict supervision of the work of certified midwives practising in the administrative county area, and the record of stillbirths stated above may

be taken as approximately correct. "Stillbirths" include all infants born dead after the twenty-eighth week of pregnancy. Table VI. shows that in spite of the great reduction which has taken place in the postnatal causes of infant mortality during recent years, the causes of antenatal death remain as potent as ever.

[Here Dr. Butterworth referred to the work of Dr. J. N. Cruickshank on "Maternal Syphilis as a Cause of Death of the Fœtus and of the New-born Child," recently published by the Medical Research Council (vide THE LANCET, March 22nd, p. 608 et seq.)]

(B) *The Discovery of Gonorrhœa in the Female.*

In the rural and small urban districts of under 20,000 population in a large county like Lancashire the discovery and treatment of gonorrhœa in the female is a very difficult administrative problem. One of the greatest difficulties is our lack of knowledge of the incidence of the disease. The sources of information are meagre. I obtain a certain amount of information as to the occurrence of gonorrhœa in women through the administration of the Midwives Acts.

Table VII. shows the number of notifications of ophthalmia neonatorum received since the year 1914 in connexion with the work of the County Public Health Department under the Midwives Acts:—

TABLE VII.

Year.	Number of notified cases of ophthalmia neonatorum.	Total births registered.	Percentage of cases of ophthalmia neonatorum notified to total births.
1914	273	38,507	0·70
1915	234	34,595	0·67
1916	265	32,695	0·81
1917	233	28,420	0·81
1918	231	27,736	0·83
1919	323	28,799	1·12
1920	464	39,767	1·16
1921	265	36,558	0·72
1922	235	32,011	0·73
1923	208	30,672	0·67

It will be noted that the greatest incidence of ophthalmia neonatorum occurred in the years 1919 and 1920, the period of the demobilisation of troops.

[A table showing for three years the condition of the eyes after ophthalmia neonatorum was included. The figures were obtained by re-visits by the county staff. The table showed for the years 1919, 1920, and 1921 details of all eye cases and of those notified as ophthalmia neonatorum, and included information regarding condition of eyes after a lapse of from 2 to 26 months from the date of the first report, the following up of such cases being regularly made. In the year 1919, of 447 cases 323 were notified as ophthalmia neonatorum. In the year 1920 the corresponding figures were 665 and 464, and in 1921 436 and 265.]

On examination of the details obtained in the inquiries into ophthalmia cases the following facts were ascertained:—

Extending over a period of 6½ years: The average interval of time between the birth of the child and the onset of the disease (ophthalmia neonatorum) was 6·05 days. The interval between onset of disease and the date on the record sent by the midwife to the medical practitioner was 1·36 days. The interval between onset of the disease and the date of notification of the case, under the ophthalmia neonatorum regulations, was 4·29 days. The length of time between the date on the Medical Help Record (first report of the case) and the date a doctor first saw the child (commencement of treatment) was 1·25 days.

The investigations carried out by the inspector of midwives, health visitors, and assistant county medical officers show that many of the severe cases of ophthalmia neonatorum are due to gonorrhœa in the mother, but the data are insufficient to express as a percentage the incidence of gonorrhœa in notified cases of ophthalmia. I also receive certain information from certified midwives. It is their duty under the rules to call in a medical man in cases where they discover purulent discharge in pregnant women. There are 663 midwives practising in the county area at the present time, and the number of records received from midwives in respect of these conditions in the year 1922 for "purulent discharge" was 20. It is unlikely that these figures represent the true incidence of gonorrhœa in pregnant and parturient women attended by certified midwives, but medical practitioners inform me that they also see very few cases in pregnant and parturient women in the rural and small urban districts, and they further state that they see very few cases either in adult males or females. The assistant medical officers and health visitors report to me very few cases of gonorrhœa in females either at the infant welfare centres or during their home visits. It is my experience, therefore, that it is very difficult to estimate, with any approach to accuracy, the amount of gonorrhœa existing in women in the rural and urban districts of Lancashire.

TREATMENT OF WOMEN AND CHILDREN.

The provision of treatment for women and children suffering from venereal disease in a large county with 121 separate urban and rural districts is a difficult administrative problem. The problem in a large town is comparatively easy where there is a well-equipped hospital containing special departments for women, children, and persons suffering from venereal disease such as are seen in the large London hospitals. The gynæcologist seeing a case of venereal disease, or the physician in the children's department seeing a syphilitic child, can coöperate with the director of the venereal diseases department and through the lady almoner knowledge is gained of contacts to be followed up.

In the smaller districts of Lancashire there are either no hospitals, or they are not suitably equipped. The respectable married women generally will not attend the treatment centres provided in the large towns, nor will they take their children. In the textile towns a large number of the women are engaged in industry, and the wife of the coal miner is a hard worker. The provision and cooking of meals for perhaps several workers on different shifts, the care of their working clothing, and the bringing up of a family leave very little spare time for the coal miner's wife.

I think provision for the treatment of syphilis in women and children might be made in certain of the existing child welfare, antenatal, and school clinics where it is possible to make proper arrangements.

In one of the combined child welfare and school clinics in a small urban district in Lancashire I was able for a time to arrange for the treatment of syphilis in children. The final results were good. The numbers would not be large in any particular district, and the patients could be seen regularly by appointment. There could by this method be a close coöperation between school medical and child welfare medical officers, inspector of midwives, health visitors, school nurses, midwives, &c., and the venereal diseases medical officers treating the cases. Ophthalmic cases of syphilis in children, such as keratitis and choroiditis, should be treated by ophthalmologists.

The treatment of gonorrhœa in women in county districts is a much more difficult problem for the following reasons: (*a*) Gonorrhœa requires daily treatment; (*b*) it is not advisable from a surgical standpoint to treat gonorrhœa in the same department at which young children and babies attend; (*c*) there would be a danger of bringing the centre under the label "venereal."

The discovery of a specific treatment for gonorrhœa would simplify the administrative problem in county districts. It is the exacting nature of the present mode of treatment which creates the main difficulty.

A Lecture
ON
ACETONÆMIA AND VOLVULUS OF THE SMALL INTESTINE IN CHILDHOOD.

Delivered at the Hospital for Sick Children, Great Ormond-street, on May 15th, 1924,

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MY subject is, I think, one of particular interest, not only on account of the extreme difficulty there is in clinical diagnosis, but because it touches upon the problem of acetonæmia in childhood, and introduces a group of cases which are of equal importance to the physician and surgeon. To discuss in detail all the aspects of acetonæmia would take me too far, and the particular cases I am dealing with will occupy most of our attention.

CONDITIONS OF OCCURRENCE OF ACETONÆMIA.

A lecture I gave in 1922, on diabetes in the young, dealt with one of the best known of all examples of acetonæmia, for, as you know, in childhood diabetic coma, which is acetonæmic in causation, marks the end of these cases. The usual symptoms you find then are the peculiar odour of the breath, air-hunger, intense weakness and drowsiness, and finally coma, with a urine which gives distinctive tests—namely, the purple colour that results from saturating 5 c.cm. of urine with an equal quantity of ammonium sulphate, and then adding a few drops of ammonia followed by a 5 per cent. solution of sodium nitro-prusside. This shows the presence of acetone and aceto-acetic acid. The purple colour on adding ferric chloride to the urine shows the presence of aceto-acetic acid. The other constituent, beta-oxybutyric acid, gives no easy clinical test. It is, however, only the most severe cases of acetonæmia that drift into the stage of coma; and it must be realised that a certain minor degree is a very frequent occurrence in many different disorders of childhood.

My colleague, Dr. R. Frew, published in 1911 the results of an examination for ketone bodies in the urines of 600 children admitted to hospital, and found their presence in 61·6 per cent. of all cases during the first three or four days after admission. He attributed the occurrence to change of diet, for it rapidly disappeared when the children had been longer in the hospital. I wonder myself whether nervous perturbation was a factor also.

We may for the moment look upon these two instances of acetonæmia I have mentioned, as at opposite poles. At one pole the frequent, mild, and indeterminate cases described by Dr. Frew; at the other, the fulminating cases of fatal diabetes. Between these poles we have various examples of its occurrence, including the remarkable group often called "cyclical vomiting." I have seen many striking examples of this most interesting disorder, in which acetonæmia is prominent.

A feature that has always impressed me in this group has been the extreme nervousness of these children, and quite a number of my cases have been the children of doctors. A considerable number have also been only children of very anxious parents, and in addition to a nervous temperament have been overfed with fats, eggs, cream, cod-liver oil, and such like. In fact, one finds oneself repeatedly attracted by two aspects in these cases—the irritable nervous system and deficient or overtaxed hepatic function. Some of these cases are fatal. I mean by this that a fatal and most puzzling illness may occur in which acetonæmia is prominent, and after death the explanation still remains a mystery. For example:—

A female child, aged 3 years and 3 months, was admitted to hospital in 1923, with a history during the last six months of recurrent attacks of vomiting, which had been labelled "cyclical vomiting." Six days before admission she had another attack in which she became restless and somewhat "demented." Next day she was better and then relapsed and became feverish, very restless, and wandering. On the sixth day she was admitted with staring glazed eyes, acetonæmic breath, much ketonuria, and rapidly became unconscious and died in collapse. All that was found after death was a slightly enlarged fatty liver and congestion of the cerebral meninges and brain.

In some acute infections, for example, influenza with pneumonia, acetonæmia may be prominent and associated with drowsiness and other puzzling symptoms. A condition of acetonæmia, which I have seen on more than one occasion prove fatal, may result from giving heavy doses of salicylate of soda to fragile children suffering from acute rheumatism.

In such cases there is intense general depression with a feeble pulse, and sometimes polyuria. The first serious symptom in my experience has been vomiting which is most intractable, then there supervene restlessness and the deep breathing which one associates with diabetic coma. This breathing becomes more intense, restlessness passes into delirium, and then into coma. The child eventually dies in coma.[1]

In delayed chloroform poisoning there supervene intense vomiting, the sclerotics may be slightly icteric, and the face rapidly becomes drawn with deeply sunken eyes. Restlessness and sighing respirations follow, the liver enlarges, and the child dies in coma. The urine shows abundance of ketone bodies, and the breath has the characteristic odour. Post-mortem examination and microscopy demonstrate intense destruction of the hepatic tissue.

There is still another group associated with volvulus of the small intestine, and in some of these cases the acetonæmia reaches such proportions as to dominate the diagnosis. It is a group in which starvation is a feature, and it is with such cases that my lecture is concerned. When the obstruction is high and vomiting is an urgent and early symptom acetonæmia becomes rapidly apparent, and the drowsiness, loss of strength, and extreme illness may then be attributed to a primary cyclical vomiting.

I do not think that starvation explains these symptoms, which are much more probably due to some intoxication brought about by the serious results of an obstruction high in the intestinal tract. Professor Gorter, in his recent lecture, attached much importance to the element of an acute intoxication in cases of obstruction high up in the alimentary canal. At first sight it would seem unlikely that an acute obstruction should be confused with, and lost sight of in, acetonæmia, but, as I shall demonstrate, these cases are remarkable in many respects, and we find ourselves held back by certain doubts which in the time of urgency come forcibly before our eyes.

I have already described a fatal acetonæmia in which there was little at the necropsy to account for death, and certainly no obstruction was discovered. An occurrence such as this is the cause of our grave doubts, for if in one of these cases of suspected obstruction you find no physical evidence of such obstruction you recall the fact that an acetonæmia may occur with the most urgent vomiting, and a sunken drawn face such as one sees in grave abdominal disasters and yet no striking lesion be found. Further, if the cause of this vomiting is of the mysterious nature met with in cyclical vomiting you hesitate to run the risk of an anæsthetic on the hazard of finding an obstruction which may not exist. I have known such an operation undertaken with negative results and fatal vomiting follow.

[1] Hurtley and Trevanion, working upon diabetic coma, suggest that diacetic acid causes coma in virtue of the creolic group it contains, $\overset{\text{COH}}{\underset{\text{CH}}{\|}}$, and note that sodium salicylate also contains this unsaturated linkage.

CASES AND COMMENTARY.

The first case of volvulus I met with was a girl, aged 3 years, who was admitted to hospital on Dec. 4th, 1919, for vomiting and abdominal pain. She had been previously in the hospital for a similar attack with acetonæmia, and had been grouped in the class of "cyclical vomiting."

History.—The history was a very interesting one, for since the age of 1 month she had suffered from recurrent attacks of vomiting which occurred, with abdominal pain, half an hour after food. Each attack was accompanied by constipation and the appearance of an erythematous rash. In the first year she had three attacks lasting three to four days each, and later they had occurred at intervals of six weeks to two months. Between the attacks she recovered completely and was a healthy child. Previous to this admission she had been three times in hospital with the diagnosis on the first occasion of acute appendicitis (no operation was undertaken), and twice of cyclical vomiting. This attack commenced with malaise on Nov. 30th, 1919, and on Dec. 1st she vomited three times green and offensive fluid, and refused food. This continued for three days and was accompanied by constipation and abdominal pain.

Condition on Admission.—The patient was thin and looked ill, with flushed cheeks which somewhat disguised a muddy anæmia. The breath smelt of acetone and the tongue was furred. Neither the liver nor spleen was palpable. The abdomen was not distended and there was no rigidity. Fæces were felt in the lower bowel. The urine contained large quantities of acetone and diacetic acid.

Immediately after admission the vomiting stopped and the appetite returned. On Dec. 6th, when I saw her, she had vomited once and was still constipated, but now she looked well. She sat up in bed talking and taking interest, and had passed naturally a small offensive motion. The urine still contained acetone and diacetic acid. I thought, however, she had now turned the corner and would get well. On Dec. 7th she became quiet and drowsy with sunken eyes, vomited, and refused food. In spite of treatment with salines and glucose she remained in the same condition all day with a strong acetonæmic odour of breath. On the 8th she was worse, though an enema brought away a large offensive motion. In spite of this the suspicion flashed across my mind that there must be some obstruction, and this was supported by the development of some tenderness over the right upper quadrant of the abdomen, although nothing could be felt and there was no distension. In any case, unfortunately, my suspicion had come too late for she died that evening. Throughout the illness the temperature never rose above 98·4° F. The pulse in the last 24 hours rose in rate from 96 to 164 per minute.

The *post-mortem examination* showed the greater part of the small intestine to be gangrenous and to have an unusually long mesentery, which was twisted on itself clockwise through a complete circle. The cæcum and ascending colon were unusually mobile, but the remainder of the large intestine was normal.

Reviewing this case it seems a most remarkable one, particularly when you remember that the attacks, which precisely resembled one another, had dated from the first month of life. It appears to me that some partial rotation of the intestine must have continually recurred, but only in a sufficient degree to cause a partial obstruction. Then some movement of the intestine struggling against this difficulty, and possibly the effects of intense vomiting, righted the bowel again, for between times the child became quite normal. At least that is the only solution I can imagine. I can hardly believe that this was a cyclic vomiting in which a volvulus finally supervened, for sudden abdominal pain was one of the first of the recurrent symptoms in each attack.

By a strange coincidence within a week my house physician, Dr. J. C. Spence, told me that at St. Thomas's Hospital a similar case had occurred, and a volvulus of the small intestine had been discovered after death. I have no details of this case and must content myself with recording this statement.

For the next case I am greatly indebted to my colleague, Dr. H. Thursfield.

S. S., a male aged 3½ years, was admitted to hospital on Nov. 30th, 1922, for vomiting. There was nothing unusual in his history until he reached the age of 5 months, when he had an attack of vomiting and constipation, for which he was taken to St. Bartholomew's Hospital, and this was repeated at the age of 7 months. On Nov. 26th, 1922, the child refused a meal and commenced to vomit a thick green fluid, which later became watery. He wasted rapidly and was constipated, and there was considerable abdominal pain.

Condition on Admission.—He was admitted on the 30th. His breath smelt strongly of acetone. The abdomen was not distended, was normal on palpation, and not tender. He was constipated, but two results followed from enemata. The urine contained large quantities of acetone and diacetic acid. On Dec. 2nd he retained small quantities of fluid by the mouth, but in the evening he became delirious and very restless in spite of treatment with glucose and alkalies. On the 4th there was still vomiting and the temperature rose from 99° to 107° F. The pupils were unequal, the left the larger, and the knee-jerks and abdominal reflexes were absent. Death occurred that day. The diagnosis of acetonæmia was made as the most probable explanation.

At the *post-mortem examination* the small intestines were found almost black in colour, and there was a small quantity of fluid in the peritoneal cavity. The small intestine also was very mobile, and had twisted on its mesentery from right to left one and a half times. The left side of the mesentery was very deficient. The cæcum and appendix were lying below the splenic flexure and had a complete mesentery, and were also very mobile. The hepatic flexure was fixed.

Here again we find recurrent attacks of sudden pain, complete anorexia, green vomiting, constipation, and intense acetonæmia, but in this case apparently there had been no attacks between the ages of 9 months and 3½ years. The terminal symptoms of hyperpyrexia and delirium were only misleading. In my experience the great practical difficulty of a case such as this lies in the absence of any abdominal physical signs. There was here again no rigidity, no tumour, no particular distension, and yet the small intestine was gangrenous.

The next case is imperfect and inconclusive, but has considerable value in developing the points of difficulty that surround the subject.

S. A., a female aged 3½ years, was admitted to hospital on Dec. 5th, 1923, and died the same afternoon. Since birth she had been subject to attacks of vomiting and constipation at varying intervals. Two years before admission she had a severe attack, in which there was urgent vomiting and offensive breath, and in this she was "comatose" for some hours. There was constipation, but this was relieved by high enemata which brought away a large quantity of fæces, after which the child came rapidly out of coma and with a few days in bed completely recovered. She remained well until the final illness, which commenced on Nov. 30th, 1923, with constipation and vomiting. The bowels were well open on Dec. 1st and slightly on Dec. 2nd. On the 3rd she, a much petted child, was given in addition to her ordinary diet smoked haddock and meat, and that night there commenced incessant vomiting, which was at first green and later brown. On Dec. 4th she was comatose, and next morning a small motion was passed after a glycerine enema. That day she had apparently two tetanoid convulsions which quickly passed. On the 5th the vomit smelt fæcal and she was admitted here moribund, but rallied slightly after admission. Her eyes were deeply sunken and features pinched and white. The breath smelt strongly of acetone, and the urine was loaded with acetone and diacetic acid. Fæcal vomit was noticed on the pillow. The liver was large and firm, but nothing else abnormal was discovered. There was no optic neuritis. Dr. D. Nabarro found the blood-sugar was 0·02 per cent.; the cerebro-spinal fluid normal. She died at 2 P.M. Unfortunately, a post-mortem examination was refused.

I would point out that there was no history of abdominal pain in this case, but there were mysterious attacks of vomiting and constipation, extreme acidosis with breathing of the type met with in diabetic coma, and, most important of all, fæcal vomiting. The diagnosis must remain a secret, but it is impossible not to suspect that there must have been a high obstruction, and that the exciting cause was that unwise feeding just at the moment when the attack was apparently passing off. This possibly caused excessive peristalsis and a completion of the obstruction, which may again have been a volvulus of the small intestine.

The next case occurred this year.

The child, A. R. S., was a female aged 6 years 9 months. She was admitted on Jan. 8th for a condition of extreme acetonæmia.

History.—On Jan. 5th she vomited and had acute pain, doubling her up. The vomiting had continued until admission. The bowels were constipated and she had no appetite, but on admission to the hospital there occurred a fair-sized, rather constipated action. Her previous history showed that three years before she had an attack of abdominal pain and vomiting which lasted about 24 hours. The vomit was thin and greenish. Three months ago she had also another attack of vomiting with abdominal pain which lasted about two days. In both attacks there was constipation.

Condition on Admission.—The child was collapsed with sunken eyes, the breath, at first not acetonæmic, later became strongly so, and the urine was loaded with diacetic acid. Her general condition resembled that of the first fatal case I have already detailed. Her pulse was 100, resp. 24, temp. 98° F All food was refused, and when I first saw her there was vomiting of an inoffensive, green fluid. The bowels had been open once after a rectal injection of glucose. The motion was considerable and constipated.

The *diagnosis* was most difficult. The abdomen was not distended and nothing definite could be felt. The rectum was ballooned, but there was no tenderness or resistance. The child's condition was so desperate, and the memory of fatal cases of acetonæmia without explanation at the post-mortem so imprinted on my mind, that I seized on the facts that the bowels had been open and the absence of any physical signs as indications to wait at least for a time before operation, and I did this after recalling and weighing for the first time the possibilities of a volvulus of the small intestine. Uneasy in my mind, I came down to hospital next day to find that the child was worse and that some remarkable changes had occurred.

There had been several large green vomits in the night, the temperature had risen to 100°, and the pulse was now 160 per minute. The abdomen had become distinctly distended in the upper segment, and I felt a resistance which was much in the position of the tumour of a pyloric stenosis but lying deeper and rather more indefinite. This made me conclude that there was an obstruction, though I felt that now I was almost certainly too late. Mr. O. Addison was in the hospital and he at once saw the case with me, and this time we noticed peristalsis of the stomach. We felt the only hope lay in an instant operation.

Operation.—On opening the abdomen the small intestines were found blue and collapsed, and herniated through a hole in the great omentum. They had also rotated clockwise round an axis in the position I had felt the resistance. This axis was at the duodeno-jejunal junction and was apparently formed by adhesions. The entire duodenum was greatly distended. The obstruction was rapidly corrected and the child for a few hours seemed to rally and did not vomit again, but suddenly collapsed and died five hours after the conclusion of the operation. Though I diagnosed the volvulus and located the axis of rotation before operation, this diagnosis was in reality more a successful guess than a reasoned opinion, but it is, I think, worth recording. Though too late, it served to break at least for me the paralysing influence of the word acetonæmia, and makes me hope that one day I may save one of these cases.

Here, again, we have recurrent attacks of abdominal pain, green vomiting, acetonæmia intense in degree, and constipation. This has been the only case I have seen in which abdominal examination was of the slightest assistance, but then, unfortunately, not until the condition was practically hopeless.

The next case is an illustration of the difficulty of the clinical aspect of the subject.

A. D., a boy aged 7 years, was admitted to hospital in May, 1922, for an acute attack of vomiting with extreme collapse, from which he made rapid recovery. Six months later he was again admitted for a similar attack, and again recovered rapidly. I have no intimate knowledge of these illnesses, but understand that a remarkable feature was the extreme degree of collapse. On Jan. 13th, 1923, he had a third attack and was admitted into the children's ward at University College Hospital. The attack commenced very acutely at night with vomiting, diarrhœa, and abdominal pain, and when admitted he was apparently moribund. His temperature was 96° F., he was almost pulseless, with respirations 40 to the minute. The attack terminated on the morning of the 16th. Physical examination was negative except for the discovery of much diacetic acid and acetone in the urine, and a liver just felt below the costal margin. The appearance of the boy was similar to that which you see in the worst attacks of cyclic vomiting. His recovery was rapid, the temperature rising for two days to 99°. Much care was taken in the diet, and in a few days he seemed quite himself. A week later, with no change in diet or treatment and while under supervision in the hospital, at 10.30 P.M. he vomited and passed a large watery motion. Two more such motions were passed in the early hours of the morning and within four hours he was in a state of complete collapse, with his breath smelling strongly of acetone and with acetone and diacetic acid in the urine, respiration was sighing, the features sunken, and the skin cold.

Again he recovered rapidly, but on the 27th, four days later at midnight, he had another attack with epigastric pains, but in this there was no vomiting or collapse. Next morning the abdomen was distended but not greatly, and there was no tenderness. Two days later, between 11 P.M. and 1 A.M., another attack occurred with vomiting, but of slight severity. The report by Dr. A. Salmond on a barium meal was as follows: "Œsophagus normal, stomach orthotonic, completely empty in six hours. Lower pole of cæcum mobile and not tender. Irregularity of distribution in small intestines suggesting adhesions." No further attacks occurred and he left the hospital in apparently normal health.

Six weeks later, at 5 A.M. on March 13th, 1923, he was readmitted in a state of extreme collapse. Temp. 96°, pulse 150, respirations 35 per minute. The respiration was sighing; the face blue and drawn; the limbs cold and acetone in the breath, and diacetic acid and acetone in the urine. The history was identical with other attacks. Sudden vomiting and three or four watery motions had occurred in the late evening. Once again he made a steady recovery, with some fever and constipation in the first few days. The stools showed a mixed growth of streptococci and *Bacillus coli*. Repeated physical examination led to no discoveries.

He was lost sight of until Jan. 14th, 1924, when he was admitted for headache, vomiting, and abdominal pain. This attack had commenced at midnight. His condition on admission was unlike that on previous occasions, for his temperature was 100°, and his abdomen was generally though not much distended. There was no tenderness and rectal examination was negative. Recovery was rapid.

He was said to have had during November and December, 1923, ten attacks of vomiting and diarrhœa. When I saw him he was perfectly comfortable and with a normal temperature.

I must admit that this case completely puzzled me. Though much investigation was made no tangible evidence of the cause of these attacks was forthcoming. There is, however, one point which is apparent in contrast to the preceding cases. Each attack was associated with a watery diarrhœa that resembled in its intensely depressive action the diarrhœa of cholera or sprue. Another feature in this case was the regularity with which the attacks commenced about 10 P.M. and usually ended in the early morning. Biased perhaps by my experience in the cases I have related, I decided that though the boy seemed well save for slight abdominal distension upon an exploratory laparotomy. Mr. G. Williams undertook this for me on Jan. 31st by an incision through the sheath of the right rectus. Masses of enlarged glands were found, though none of large size in the mesentery. The colon was rather loose. The small intestines had a curious tessellated appearance, such as I had seen in the previous case of volvulus, but there was no twist or band. The appendix was removed but was apparently not diseased and threw no light on the condition. The boy made an uninterrupted recovery, but I am not really wiser and shall fear further attacks. It is possible in this case that some partial rotation of the intestines takes place and causes some vascular obstruction with acute œdema of their walls as the result, rather than any sensible occlusion of the gut, but this is a pure hypothesis. The enlarged glands can hardly explain such a sudden and severe condition, and the absence of any blood in the stools seems to weigh against any ulceration of the bowels or intussusception.

The next case is in some respects the converse of the preceding one.

W. C., a male aged 11¾ years. He was in hospital in May, 1919, for three weeks at the age of 10 years 4 months, with a history of recurrent severe attacks of abdominal pain which caused vomiting and prevented sleep. These attacks had been recurring every six to eight weeks for the last 18 months. There were also outbreaks of diarrhœa in some of these attacks. He was a very thin boy with a doughy abdomen, in which were felt two coils of intestine which seemed matted together, and peristalsis of the intestine was occasionally noticed. His temperature varied between 97·8° and 99·4° F. Von Pirquet's reaction was negative. The final diagnosis was abdominal tuberculosis. There was no history of acetonæmia. In October, 1920, about

12 months later, he was admitted again with abdominal pain and distension, vomiting, and constipation. Some free fluid was detected in the abdomen, but he died shortly after admission.

The *post-mortem examination* was confined to the abdomen. The intestines were gangrenous, and were twisted contra-clockwise, two complete revolutions. The small bowel was "pinched off" about four inches above the cæcum. The blood-supply to the whole of the small bowel had been cut off. The mesentery was exceptionally long and free. There was about a pint of blood-stained fluid in the peritoneal cavity, but there was no evidence of abdominal or pulmonary tuberculosis.

Here was a case in which enlarged tuberculous glands and intestinal tuberculosis were suspected and in which there was a history of attacks of pain and vomiting with some diarrhœa, but the cause of death was a volvulus and there were no enlarged glands. The only other point was the absence of any evidence as to acetonæmia. The preceding case was acetonæmic and proved to have enlarged abdominal glands, but no volvulus was present at the time of operation.

A DEVELOPMENTAL EXPLANATION.

I should like to refer any who are particularly interested in these cases to a recent and valuable paper by N. W. Dott[2] on Anomalies of Intestinal Rotation. It is far too extensive and elaborate for me to do it any justice here. The writer commences with the embryology, and with the development of the fore-, mid-, and hind-gut. He points out that the lower end of the fore-gut (duodenum) soon becomes fixed, as also the hind-gut, the colic angle of which is early hitched up by a retention band. The duodenum and colic angle lie close together and between them is the mid-gut undergoing rapid development, on which account it herniates through the umbilical opening of the fœtus. There are three stages in the development in which rotation may occur in this loose unfixed gut, and it is the second stage which has special bearing upon our cases. In this stage the rotation is due to disturbance in the normal sequence of return of the contents of the umbilical hernia into the fœtal abdomen. Probably the disturbance is concerned with the return of the cæcum into the fœtal abdomen, which instead of doing so last, does so first or together with the small intestine through an unusually large opening. There result various mesenteric adhesions, imperfect fixation, a mobile cæcum, or an abnormally narrow pedicle to the small intestine up to the fixed duodenum.

Dott illustrates a volvulus of the whole small intestine clock-wise as a result of malposition, and points out the importance of these abnormalities as a cause of obstruction soon after birth. Volvulus, he remarks, is the most frequent lesion on account of (1) an unduly narrow base to the loop of intestine; (2) undue length of the mesentery; (3) a point of adhesion at the convexity of the loop which acts as an axis of rotation. He mentions as exciting causes (1) unusual effort; (2) peristaltic mobility of the intestine; (3) undue distension of the stomach.

CONCLUSION.

My treatment of the subject is obviously imperfect and betrays the wanderer finding his way with uncertainty. The lesson it teaches is, however, clear enough, and is that we must beware of being content with the diagnosis of acetonæmia in young children when there is a history of abdominal pain and partial constipation, even though that acetonæmia be intense and physical examination of the abdomen negative. It may be wondered why I have included the case without volvulus, a case for which I can give you no satisfactory explanation; but my reasons are that the diagnosis that was made was cyclic vomiting and acetonæmia until the attack under observation in hospital seemed to exclude this suggestion, and the case itself is an example of the intense clinical difficulty that surrounds these acute attacks.

It is clear that acetonæmia is in childhood a symptom that may occur under very different conditions. Very frequently it is noticed as a fleeting event in an illness and, so far as one can judge, does not perceptibly alter the outlook, though there may be some unusual drowsiness, muscular feebleness, or cerebral symptoms. If persistently looked for, it may be recognised as an event which may have no serious clinical significance at all, as in Dr. Frew's series. In other cases, as in diabetes, it may have the greatest importance as a danger-signal. In yet others it may be the prominent feature in a recurrent illness which may, though rarely, prove fatal, and in which after death we may find no changes in the viscera, the liver possibly excluded, that can satisfy us as to the cause of death. Finally, it may prove a cause of grave errors in diagnosis, by its prominence in cases such as I have detailed here. Certainly it is not alone responsible for this error, the other factors being the absence of abdominal physical signs, the occurrence of only partial constipation, and the history of repeated attacks with complete recovery between times.

The obvious moral is, in our present state of knowledge, never to regard acetonæmia in childhood as a disease, but always as a symptom.

I must express my indebtedness to Mr. S. I. R. Chadwick, my late house physician, for great assistance in collecting the data which form the basis of this contribution.

[2] British Journal of Surgery, October, 1923, xi., 251–286.

SOME CASES OF ALEUKIA OR APLASTIC ANÆMIA

ASSOCIATED WITH THROMBOPENIA.

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THIS communication is intended to draw attention to some blood pictures presenting unusual features; the clinical conditions of which these pictures formed a part conformed in general to what in this country usually goes by the name of "aplastic" anæmia, and which has been called by Frank,[1] and after him by other continental workers, "aleukia," indicating by this an actual and relative decrease of the polymorphonuclear leucocytes. This decrease of the polymorphs gives the condition its name, but it is associated with other peculiar features, among the most striking and important of which is a decrease in the platelets; it is known from the work of Bedson[2] and others that a withdrawal of the platelets from the circulation in experimental animals is associated with purpura and hæmorrhage, and it is this deficiency of the platelets which is supposed to account for the hæmorrhagic tendency shown by cases of the aleukic type. In America, Duke[3] has produced clinical evidence in support of this view. In the opinion of Frank and his followers, the condition depends upon a primary deficiency of the hæmatopoietic system, and Frank has even laid it down that, when evidence of infection appears in the face of the blood picture of aleukia, the infection must be regarded as secondary to the damaged state of the hæmatopoietic system. Three of the cases to be described afforded evidence of infection; clinically all were characterised by a diminution, both actual and relative, of the polymorphs and by a hæmorrhagic tendency; in all in which observations were made the platelets were markedly deficient.

CASE 1.—The patient, a male, aged 36, suffered from "influenza" in February, 1922; thereafter noted increasing pallor; in March experienced an attack of pain in the right knee, which persisted for a few days; from that time on similar attacks of pain occurred at intervals of two or three weeks in one or both knees, always unattended by swelling or other visible evidence of inflammation. In June the pain in the knees became so severe that the patient took to his bed. Thence onwards the pallor increased. Early in August a purpuric rash appeared on the left arm, and there was bleeding from the gums on brushing the teeth. On admission in August, 1922, the patient was very pale; petechial spots

were present on various parts of the body and limbs; the spleen was palpable and tender. The only complaint was of pain in the knees and weakness.

Patient remained in hospital until April, 1923, during which time there was little change in his general condition. The attacks of pain in the knees continued at intervals of a few weeks, being usually accompanied by an evening rise of temperature for several days in succession. Between the attacks the temperature was normal and the patient quite comfortable. Slight bleeding from the gums was persistent, and there were occasional outbreaks of petechial rash. From Dec. 16th, 1922, to Jan. 9th, 1923, the patient was treated with stabilarsan intravenously, receiving 2·2 g. intravenously in 15 doses. Otherwise treatment was by arsenicals by mouth. In April patient left the hospital at his own request; death occurred in August; there was no autopsy.

Results of examination of the blood were as given in Table I. In many instances examination of the blood films revealed some degree of anisocytosis and poikilocytosis; a slight degree of polychromatophilia was also present; nucleated red cells were present to the extent that 2 to 3 were usually encountered in counting 100 white cells. In spite of these findings, and in accordance with the observation that the colour-index never rose above unity, pernicious anæmia was ruled out in the diagnosis by the fact that examination of the gastric contents after a test-meal showed free HCl to the extent of 0·073 per cent. and combined to the extent of 0·033 per cent.

A most striking feature of the blood picture in this case was the "aleukia"—the great diminution, both relative and absolute, of the polymorphonuclear neutrophiles. The intermittent temperature and enlarged spleen both suggested an infective process—though both are reported by Frank in his cases of aleukia.

In the next case an infective process certainly played a part, though how far as a cause and how far as a result of the aleukia is open to discussion.

CASE 2.—Female aged 50, married, five children; rheumatic fever at age of 30. In December, 1922, the patient had a severe attack of pain in the left loin. In April she experienced a second attack of a like nature, lasting for some days. From that time on until her admission on Sept. 1st, 1923, the attacks recurred at intervals of a few weeks, and she became steadily worse and more run down.

Condition on Admission.—The patient was pale, and complained principally of a rather ill-defined pain in the back, which was tender to touch. Tenderness was elicited on deep pressure in the abdomen, but palpation revealed nothing abnormal. Shortly after admission the site of the pains moved to the upper arms and thighs. At first it was impossible to identify the nature of the pains, but as the condition advanced, it became obvious that they were located in the bones. In spite of the exhibition of iron and arsenic, the pallor steadily increased and the patient became increasingly asthenic. On pricking the ear for the blood examinations detailed below, bleeding continued for some 15 minutes to half an hour, a very marked prolongation of the bleeding time. In October the spleen became palpable and thereafter steadily enlarged; at this time also hæmorrhage, never severe, but almost continuous, started from the nose and continued until death. On the 15th, venipuncture was performed for the purpose of cultivating the blood; on applying a rubber band around the arm just above the elbow for the purpose of producing venous engorgement a large and striking crop of purpuric spots appeared in the antecubital fossa distal to the constricting band; this was the only purpuric manifestation. The blood culture itself was negative.

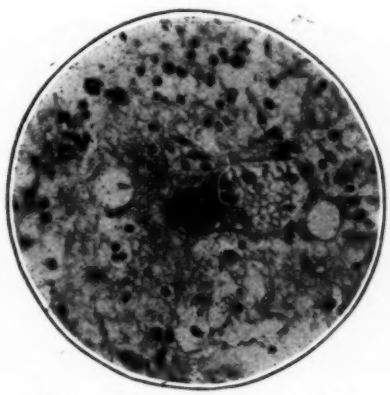
During the whole of her stay in hospital the patient ran an irregular intermittent temperature; at first it never rose above 101° F. and there were long apyrexial periods; during the last two weeks of life, however, it became continuous, rising as high as 104° in the evenings.

The result of blood examinations was as shown in Table II.

Autopsy.—At autopsy, save for considerable fatty change, all the organs except the spleen, which was enlarged, and the bone marrow, appeared normal. It had been anticipated that the bone marrow throughout the body would be of the greyish colour and dry consistency usually met with in the aplastic anæmias, and this was the case so far as that of the ribs, sternum, diploë, and right ulna were concerned. The only other bone of which the marrow was examined was the left femur; the shaft of this bone contained a deep red, jelly-like tissue, very different from the contents of the medullary cavities of the other bones examined, and also very different from the opaque, maroon-coloured marrow usually found in the same site in pernicious anæmia.

On microscopic examination it was obvious that the peculiar appearance in the marrow of the femur was due to hæmorrhage within the medullary cavity. Sections showed no hæmatopoietic tissue, but masses of red cells in process of disintegration, together with much formation of fibrin. The picture was that of a fairly recent hæmorrhage, in which the hæmoglobin was in process of being dissolved out of the red cells, but in which definite organisation had not yet commenced. Further examination showed clumps of streptococci lying in the hæmorrhagic areas, for the most part in what was left of the sinuses of the marrow (Fig. 1).

FIG. 1.



Case 2.—Streptococci in marrow of femur.

Microscopic examination of the spleen showed very similar appearances—masses of effete red cells, fibrin formation, and the presence of clumps of streptococci. Streptococci were also demonstrated in the sinuses of the liver, though here they were unaccompanied by extravasation of blood, and were presumably due to terminal spread by the blood-stream.

Taken in conjunction with the fact that severe gnawing pains had existed in the shafts of the long bones for weeks before death, these post-mortem findings are of considerable interest. The presence of the hæmorrhages would seem to offer an explanation of the pains and the presence of the streptococci an explanation of the hæmorrhages. The presence of hæmorrhages and of streptococci in the spleen offers an explanation of the enlargement of this organ, and the fact that this enlargement made itself apparent some weeks after the onset of the bone pains suggests that the invasion of the spleen was secondary to that of the bone marrow. It seems probable that, could an examination of the lumbar vertebræ have been made post mortem, an explanation of the early lumbar pain might have been forthcoming along the same lines. The fact that quite late in the condition culture of the blood was negative, together with the fact that post mortem the heart valves were found to be unaffected, indicates that, except as a terminal event, at no time was the passage of organisms into the blood-stream very free.

CASE 3.—Male aged 19. No past history of importance. Onset on May 27th with headache, sore throat, and swollen glands; two days later bleeding commenced from the throat. On June 2nd patient was removed to a fever hospital; while there the bleeding continued from the throat and also occurred from all other mucous surfaces. The tonsils were ulcerated, but no glands were now palpable. A petechial rash appeared on the mucous membrane of the mouth and on the skin of the arms and trunk. The temperature ran as high as 103° F. On June 8th patient was admitted to St. Thomas's Hospital; on the same day he received a transfusion of 900 c.cm. of citrated blood.

Blood count: Hb below 20 per cent.; red cells, 1,400,000; white cells, 200. White cells nearly all lymphocytes; platelets very scanty. Death occurred on June 11th.

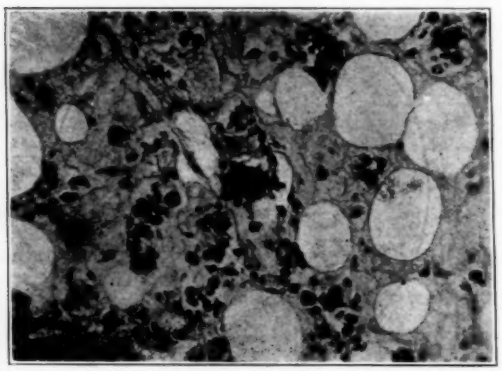
Autopsy.—Body showed purpuric spots on arms, chest, and abdomen; in the abdominal cavity the mesentery showed purpuric patches, and there was a large hæmorrhage around the lower pole of the right kidney; the spleen was large, firm, and very dark; the liver was large, soft in consistency, and in colour dark red mottled with yellow; the yellow mottling was due to necrotic patches throughout the organ. The heart muscle was soft, the valves were normal. The bone marrow of the femur was dark red and semi-liquid. Microscopic examination of the liver showed

the yellow patches to be areas of focal necrosis; numerous coliform organisms were present in the sinuses throughout the organs; similar coliform organisms were demonstrated in section of the spleen and the marrow from the femur (Fig. 2), and in both these situations abundant hæmorrhages were evident.

CASE 4.—Male aged 34. Originally a typical case of myeloid leukæmia; swelling of the spleen was first noticed in July, 1923; patient was admitted to hospital during the same month, his blood then showing a white count of 121,000 per c.mm. He received a number of applications of radium to the spleen. In October he commenced to run an irregular pyrexia, which continued until death. His white counts were as follows: Oct. 22nd, 28,000 per c.mm.; Nov. 6th, 34,000; 24th, 5700; Dec. 13th, 2800. At this time a petechial rash appeared on the back and hæmorrhage occurred from the mucous membrane of the nose and throat. Death occurred on Dec. 16th.

Autopsy.—This case showed a miliary tuberculosis. The only unusual feature was the fact that in the only bone examined, the femur, the marrow showed extensive involvement in the tubercular process. A section of the bone marrow is shown in Fig. 3.

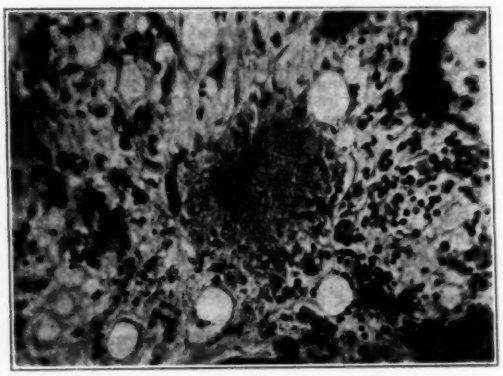
FIG. 2.



Case 3.—Coliform organisms in marrow of femur.

bone marrow after death—in one case streptococcal, in one due to a coliform bacillus, and in the last tubercular. There are good grounds for believing that such a septic condition of the bone marrow would also have been found in Case 1 had examination been made. On the face of it, it would appear reasonable to attribute the blood picture and the clinical condition to the infection of the bone marrow. Some doubt is thrown upon this interpretation by the next case to be described.

FIG. 3.



Case 4.—Tubercle in marrow of femur.

CASE 5.—Female aged 53. Always had tendency to bruise rather easily; menstruation usually excessive until cessation. In January, 1923, one of her eyes became "black" without any known previous trauma, at the same time petechial spots appeared on the gums and lips. In April, 1923, a tooth was extracted; the bleeding continued for five hours, until the socket was plugged and oozing continued for some time after this. Thereafter she became very pale. Since January she had bruised even more easily than usual, and had had several outbreaks of purpuric spots on the feet and legs. On admission in May, 1923, the patient showed numerous bruises all over the body and limbs, ecchymoses were present on the gums and purpuric patches on the feet and legs. The spleen was not then palpable. Blood counts in this case were as shown in Table III.

TABLE I. *Blood Examinations.* (Case 1.)

Date.	Red cells per c.mm.	Hb.	Colour index.	White cells per c.mm.	Polymorphonuclear.						Lymphocytes.		"Large hyalines."		Platelets per c.mm.
					Neutrophiles.		Eosinophiles.		Basophiles.						
					Per cent.	Per c.mm.	Per cent.	Per c.mm.	Per cent.	Per c.mm.	Per cent.	Per c.mm.	Per cent.	Per c.mm.	
12/8/22	1,500,000	25	0·8	7300	7	511	Nil.	Nil.	2	146	90	6570	1	73	—
26/12/22	1,600,000	—	—	8800	1	88	,,	,,	Nil.	Nil.	98	8624	1	88	—
5/1/22	1,300,000	25	0·97	7000	6	420	,,	,,	,,	,,	87	6090	7	490	—
5/2/23	2,000,000	25	0·6	6000	12	720	0·5	30	,,	,,	85·5	5130	1	60	80,000
21/2/23	1,900,000	—	—	5700	8	466	Nil.	Nil.	,,	,,	87	4959	5	285	—
1/3/23	1,200,000	—	—	4000	13	520	,,	,,	,,	,,	87	3480	Nil.	Nil.	60,000
30/4/23	1,025,000	20	1	4000	5	200	,,	,,	3	120	92	3680	,,	,,	—
5/7/23	1,330,000	22	0·88	2200	25	550	,,	,,	Nil.	Nil.	75	2650	,,	,,	—

TABLE II. (Case 2.)

19/9/23	3,040,000	45	0·75	8700	—	—	—	—	—	—	—	—	—	—	—
12/10/23	1,940,000	20	0·5	4680	7	328	Nil.	Nil.	1	46	91	4259	1	47	20,000
18/10/23	1,450,000	21	0·7	900	10	90	,,	,,	Nil.	Nil.	90	810	Nil.	Nil.	Almost totally absent.

TABLE III. (Case 5.)

4/5/23	3,600,000	75	1	1600	50	800	Nil.	Nil.	Nil.	Nil.	46	736	4	64	Scanty.
13/6/23	5,200,000	65	0·65	3750	—	—	—	—	—	—	—	—	—	—	,,
20/6/23	5,500,000	73	0·66	3000	—	—	—	—	—	—	—	—	—	—	32,000
10/12/23*	4,080,000	73	0·9	2200	34	748	Nil.	Nil.	2	44	59	1298	5	110	64,000
2/3/24*	5,180,000	70	0·7	4000	44	1760	,,	,,	Nil.	Nil.	49	1960	7	280	50,000

— Indicates no observation recorded. * After discharge from hospital.

Here are, then, four cases the principal features common to all of which are anæmia, a hæmorrhagic tendency, and leucopenia, associated in those cases in which observations on the point were made with a relative and actual diminution of the polymorphs and a disappearance of the platelets. In three of these cases it was possible to demonstrate an infection of the

Notes on Blood Counts in Table III.—May 20th, 1923: Some anisocytosis and poikilocytosis of red cells, but no nucleated forms seen. Notable diminution of the platelets; many "giant" forms present. June 13th: Platelets very deficient. 20th: Some anisocytosis and poikilocytosis, but

not so marked as previously. Platelets still very scanty; "giant" forms still present, but not so numerous as in previous observation. Dec. 10th: Anisocytosis and poikilocytosis still present.

On all occasions on which blood was taken for examination the hæmorrhage following the necessary prick was very prolonged, indicating a greatly increased bleeding time. While in hospital this patient developed a crop of petechiæ all down the left side, on which she was accustomed to lie while in bed. Otherwise the course was uneventful, and, as will be seen from the blood counts given above, her condition steadily improved. There was no overt hæmorrhage at any time, but occult blood was present in the stools. Examination of the stomach contents after a test-meal showed free HCl 0·09 per cent., and combined 0·01 per cent. The patient was discharged in July and seen again in December, 1923, and March, 1924. On the last examination she complained of pain in the left side, and on examination the spleen was found to be enlarged and palpable. She stated that she still bruised readily, but otherwise appeared to be in fair health.

In this case the condition of aleukia, so far as the observations go, seems to be inherent, though subject to fluctuation. The blood picture shows the same features, though to a less marked degree, as in Cases 1–4, and would seem to indicate an inactive condition of the hæmatopoietic system. It is not difficult to believe that such a hæmatopoietic system would offer but little resistance to infection and that in the face of an infective agent, no matter of what nature, the patient might readily pass into the condition illustrated by Cases 1–4. Case 4, indeed, affords an instance of a damaged hæmatopoietic system being attacked by an infection—the noxa being supplied in the first instance by the leukæmic condition, and in the second by the radium treatment—while the infective agent in this instance was the tubercle bacillus. I have seen one other case, of which, unfortunately, I have no notes, identical in every way, except that the patient was a woman, and X rays were used in treatment instead of radium. In this case I was able to demonstrate a streptococcus in the bone marrow.

These last two cases, in which the infection of the bone marrow is known to have occurred in the presence of pre-existing damage, seem to afford some evidence for the belief that in all the cases described the bone marrow may have been in an unhealthy condition prior to its infection. The fact that in Case 1, in such bones as were examined and the marrow of which was not the seat of an infective process, the marrow was of the dry, colourless appearance usually associated with anæmia of the aplastic type, also appears to afford some evidence that in this case at any rate the myelophthisic condition was primary to the infection.

Myelophthisic Condition giving Rise to Blood Picture of Aleukia.

Of the myelophthisic condition giving rise to the blood picture of aleukia, Frank recognises three degrees.

1. *Intermittent Thrombopenia.*—This condition manifests itself clinically by occasional recurrent attacks of hæmorrhage and purpura; it is seen mainly in children, and embraces those conditions now variously known as purpura hæmorrhagica, peliosis rheumatica, Henoch's purpura, and so forth; it may also occur in adults. Frank states—and his view is confirmed by such other writers as have given attention to the matter—that, prior to the onset of the hæmorrhagic manifestations in these cases there is always a diminution in the platelet count, though between attacks this is normal, and some degree of leucopenia with an actual and relative decrease of the polymorphonuclear neutrophiles. The present writer has only had the opportunity of investigating one case of this kind: in it the platelets were reduced to 50,000 per c.mm.

2. *Essential Thrombopenia.*—The condition just described is characterised by its intermittency and by a tendency to disappear. In some persons, on the other hand, it may last for long periods or throughout life. Such persons bruise readily and may at times have attacks of purpura or hæmorrhage of greater or less severity. The blood picture shows anæmia, a reduction in the platelet count, leucopenia of varying degree, and a diminution in the polymorphonuclear neutrophiles, both relative and absolute. Case 5 above would fall under this head.

3. *Aleukia Hæmorrhagica, or Aplastic Anæmia.*—An accentuation of the features described above will show itself clinically by severe anæmia, purpura, and hæmorrhage. Except for the accentuation of all the features the blood picture will be the same as described already. In the most severe cases the hæmorrhage may be intense and the downward progress rapid. Cases 1, 2, and 3 above would fall under this head, with the infection as a superadded phenomenon.

It will be seen from the above that Frank has attempted to bring together within one concept a number of clinical conditions not now regarded as necessarily related. He does admit that typical aplastic anæmia may arise as the result of the activity of certain poisons, citing in this connexion the experimental work of Bunting[4] with benzol, and also the effect of X rays; Case 4 above would be one of these cases due to a specific noxa. Leaving these cases aside, however, he maintains the existence of aleukia as an entity (wohlumschriebene Krankheit).

The counts of the platelets given above were made by counting the platelets against the red cells in 2 per cent. sodium citrate in normal saline solution. A drop of this solution was placed upon the nail bed of the patient's finger and puncture made through the drop, the drop of blood and solution being then received into a 1 c.cm. bulk of the solution in a paraffined agglutination tube. The actual count was then made at leisure in the laboratory. This method can only be regarded as approximate. With normal persons the count usually comes out at 250,000 to 350,000. A count of below 100,000 is looked upon as indicating a definite thrombopenia.

My thanks are due to Prof. H. MacLear, Director of the Medical Unit, St. Thomas's Hospital, and Dr. C. R. Box, of St. Thomas's Hospital, for permission to publish cases; to Dr. Coulter, of the Police Convalescent Home, Hove, for notes on the progress of Case 2 after the patient had left hospital; and to the Medical Research Council.

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THE INDICATIONS FOR OPERATIVE TREATMENT IN CASES OF PULMONARY TUBERCULOSIS.*

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A REAL interest in the surgical treatment of pulmonary tuberculosis is at last stirring in this country, roused by the visits of foreign surgeons with big experience. Though I have been doing the various thoracic operations for the last 12 years and more, it has only been possible during the last two years or so to get the work properly organised. Since then, however, the work has proved so stimulating, and the results so encouraging to those who have watched the cases, that a greater general desire for knowledge on this subject has developed in the Association. For this reason I have been asked to define the type of case fit for surgical intervention. Under the terms "surgical treatment" and "surgical intervention" I am including artificial pneumothorax; but this does not mean that I consider pneumothorax should be done by the surgeon. "Surgical treatment" is utilised as a convenient term for referring to certain forms of special treatment as opposed to treatment by graduated exercises and the use of vaccines.

It is tempting, in passing, to speculate on the changes that will have to come about in sanatoria

* Delivered before the Welsh National Memorial Association at Llandrindod Wells.

built for treatment by graduated exercises. A time will come when the public will expect that the surgical methods which are proving so triumphant shall be available for rich and poor alike. It will mean the addition of operating facilities as well as X rays, an increase in nursing accommodation and of nursing and medical staff. In the majority of institutions the staff is inadequate in numbers, even for pneumothorax treatment, on anything like the scale on which it should be used; it is wholly inadequate if surgical treatment is made available for all those cases for whom it is suitable.

Cases under Personal Observation.

In my own sanatorium, out of 30 patients seven are having pneumothorax treatment. Of these, one is having a bilateral pneumothorax; the right side was started three years ago and adhesions had to be divided to obtain complete collapse. The left side was started two years ago. One is an advanced unilateral case who has been under treatment at various places since 1919; pneumothorax had not previously been suggested. It is nine months since I started; his cough and sputum are reduced to a negligible amount and the rectal temperature, which was averaging 101° F. at nights, is now not higher than 99°. A third case is a young woman who came in with considerable bilateral disease. Her evening temperature during the first three months varied between 100° and 102°. Absolute rest had no effect on her temperature and she lost weight, but the signs on the least affected (right) side subsided sufficiently to allow me at last, and in desperation, to start a pneumothorax on the left side last June. By the middle of July her temperature had started to drop. Although her pneumothorax is most incomplete, her evening temperature (rectal) has, during the last eight months, averaged 99°. She can now walk three miles and has gained 24 pounds in weight. A fourth case was admitted with a pyopneumothorax following on artificial pneumothorax. The liquid has been repeatedly replaced by oxygen but re-accumulates. I propose doing a thoracoplasty on him.

I am going to attempt a pneumothorax on three others; on one of these, if it fails, a thoracoplasty will have to be done. On three of the patients here at present a pneumothorax was tried and failed. On one of these I did a thoracoplasty, after trying ordinary treatment for eight months without success. She, from the day of the operation (eight months ago), has had neither cough nor sputum, although she had had both persistently for two years prior to it.

Aim and Method of Production of Collapse.

The aim and object of all varieties of surgical intervention in suitable cases is to obtain collapse of the lung in order to (1) rest the lung—as one does a tuberculous joint; (2) obliterate cavities and produce approximation of their walls—as one does with all infected cavities, when possible; (3) compress the lung and so prevent bleeding; to this may be added (4) put the lung out of action to abolish dyspnœa. It is generally understood that with the rest, obliteration of cavities and compression obtained by collapse, the symptoms, cough, expectoration, and bleeding, together with those symptoms due to the secondary infections, are diminished or abolished according to the extent of the collapse of the lung and the limitation of the disease to the one side. But it is not so generally realised that dyspnœa is a symptom dependent far less on the extent of the loss of functioning lung substance than on the interference with the relative freedom of expansion of the lung and the chest wall. Dyspnœa may be more marked in a comparative early case of unilateral fibrosis which is hindering expansion of the lung while the corresponding side of the chest wall is moving freely, than it is in a more advanced and bilateral case in which the movements of the chest wall have become restricted and are therefore, at each respiration, attempting to produce much less expansion of the lungs.

Collapse may be produced (*a*) of the whole lung, by pneumothorax, in the absence of adhesions; or, if adhesions are present, by thoracoplasty—i.e., partial decostalisation resulting in collapse of the lung and chest wall; and (*b*) of part of the lung, by pneumothorax, when adhesions are preventing total collapse; or by apicolysis—i.e., collapse of the upper lobe together with the parietal pleura, the space thus formed being filled in by some foreign body.

A local partial collapse of the base can also be obtained by phrenicotomy and consequent paralysis of one dome of the diaphragm; localised partial collapse results also from a localised thoracoplasty. So much simpler and less severe is pneumothorax than thoracoplasty, or even than apicolysis, that this method must always be the method of choice when practicable. With a total pneumothorax and the absence of adhesions, over 70 per cent. of the cases so treated become fit to return to work. The presence of adhesions, however, reduces this favourable result to as low as 11·1 per cent. when the adhesions are extensive. Adhesions can be divided, however, and whenever a partial pneumothorax can be converted into a total one by the division of adhesions, this must always be done.

A Classification of Tuberculosis from a Surgical Standpoint.

Having thus sketched in briefly what is the aim and object of surgical treatment, and the means by which that object can be obtained, I am in a position to indicate the types of case suitable for this treatment. To make this easier I am going to classify tuberculosis in a manner which physicians doubtless will consider most unorthodox.

A. *Acute Tuberculosis:* (1) Miliary, (2) pneumonic.

B. *Chronic Tuberculosis:* (1) *Early Stage.*—During this stage the fibrosis is nominal and the retraction of the lung due to it is easily compensated by collapse of the chest wall, displacement of the mediastinum, and emphysema of the healthy parts of the lungs. In this early stage secondary infection, though probably present to a slight degree, produces no recognisable distinctive symptoms.

(2) *Fibrotic Stage.*—The amount of fibrosis and the contraction of the volume of the lung due to it has passed beyond the limits of compensation. The pathological mechanical factors are appearing on the scene; the bronchi are becoming in places constricted, in others dilated; retention of secretions is beginning. Secondary infection is established, but is not yet of supreme importance. The symptoms are in part due to the secondary infection, but the tuberculous infection and the symptoms due to it (together with the dyspnœa due to the fibrosis) are still predominant. This stage is a transition stage between 1 and 3, but it undoubtedly deserves a class to itself, although the transition from stage 1 to 2 and stage 2 to 3 are unrecognisable. In cases with a moderately good resistance to the disease this stage may be very protracted.

(3) *Bronchiectasis and Cavity Formation Stage.*—The pathological mechanical factors are pronounced; dilatation and distortion of the bronchi and bronchioles or the presence of single or multiple cavities in the lung parenchyma are associated with a degree of retention of secretions and of secondary infection that alters the clinical picture in a very decided fashion. This is particularly the case when the secondary bronchiectasis is established; the clinical picture of tuberculosis may be completely obscured by that of bronchiectasis. The condition of the patient is serious: failure of nutrition and a high, swinging temperature are added to the picture.

Such, then, is my classification of pulmonary tuberculosis from the surgeon's standpoint. To it must be added that hæmorrhage may occur in any stage of the chronic variety. In the first stage it is never serious; in the second stage it may be alarming owing to its persistency, or distressing because of the frequency of the recurrence of the bleeding; in the last stage it may be immediately fatal.

Indications for Surgical Intervention.

I am now able to describe in what types of cases surgical intervention is indicated. I have already stated that of the three methods, artificial pneumothorax, apicolysis, and thoracoplasty, neither of the two latter should, as a general rule, be used when a complete pneumothorax is possible; and that if a pneumothorax is incomplete owing to adhesions, these adhesions should be divided if they are of that kind which lend themselves to it—i.e., are in the form of bands.

The acute miliary form of tuberculosis is practically always bilateral and is unsuitable for surgical treatment. The pneumonic form, on the other hand, is often unilateral. If it is entirely unilateral, then, unquestionably, pneumothorax offers the greatest hope of success. In this type, even if no adhesions are present, it will take a long time to collapse the lung because it is consolidated, and absorption of the pathological products takes a long time. Should adhesions prevent the production of a pneumothorax, thoracoplasty is not indicated, as the condition of the patient is too grave to stand such a serious operation. If, however, the pneumothorax is limited at the base by adhesions between the lung and the diaphragm, the phrenic nerve can be divided in the neck under local anæsthesia so as to paralyse that dome of the diaphragm and assist in the collapse of the base.

Chronic Pulmonary Tuberculosis: Stage 1.—I have said as regards this stage that it is one in which the fibrosis is so little that it can be compensated by the body itself, and, as there are neither cavities nor abnormally dilated spaces, the disease can heal completely if the resistance of the patient is moderately good and can be sufficiently improved. Surgical intervention is not, therefore, a *necessity;* on the other hand, the greater my experience the more emphatic do I become in my assertion made first some years ago now, that no case of pulmonary tuberculosis which has been diagnosed with certainty is too early a one for treatment by artificial pneumothorax, provided there are no contra-indications. I have never regretted doing an artificial pneumothorax in an early case, but I have often regretted not doing one. Let me at once add, however, that if artificial pneumothorax fails, no more severe line of treatment is justifiable.

My reason for this axiomatic statement is, that it is very difficult to gauge the resistance of a patient. I have frequently been deceived by the mildness of the disease, by the general good appearance of the patient, or by the rapidity with which the signs clear up under ideal conditions, into thinking that healing will progress rapidly and is likely to be maintained, only to find disappointment in the slowness or absence of recovery of control or the ease with which the disease reasserts itself at the first relaxation of routine treatment.

In the selection of cases at this stage for artificial pneumothorax there are certain considerations in addition to the ordinary contra-indications which have to be weighed very fully. In the more advanced cases in which pneumothorax treatment may be the determining factor as to whether the patient lives or dies, the future problem of time and expense for the refills over a period of two, three, or more years is of less serious import. But in these "early" cases the patient expects—and rightly so—to be able to return to work. If he is in a subordinate position—e.g., in an office or in the army—the leave required for these refills might seriously prejudice his position. It requires, moreover, much greater confidence on the part of the medical man to advise, and of confidence of the patient in his medical adviser to accept the recommendation of artificial pneumothorax at this period in the course of the disease.

As we shall see when we come to the contra-indications, the temperament of the individual may be an important factor in deciding against pneumothorax treatment. In these early stage cases still greater weight must be attached to the inadvisability of active treatment in a patient whose temperament is not absolutely satisfactory.

In stages 2 and 3 surgical intervention is always indicated when practicable. In stage 2, particularly when it is not far advanced, it is possible to get good results by sanatorium treatment, and the patient may, if fortunate, continue to keep well. It must be remembered, however, that the lung is not only scarred, but that also the fibrous tissue is under unfavourable conditions because it is always under tension, the fibrosis having increased beyond the stage of adequate compensation. Moreover, changes have already begun in the bronchi and bronchioles, and these have become much more susceptible to infection and reinfection. Once the patient has reached stage 3 nothing but a very partial and very temporary improvement—if that—can be effected by sanatorium treatment or by tuberculin or by any line of treatment which does not result in collapse of the lung and its dilated spaces. It must be remembered, moreover, that once stage 2 is definitely established it is probably rarely possible to keep the patient constantly free from infection, which means that he is constantly more or less a danger to other members of the community. Until stage 2 is reached, artificial pneumothorax with, if necessary division of adhesions, and perhaps phrenicotomy, is the only justifiable method of surgical intervention. But with the advent of stage 2 apicolysis and thoracoplasty have to be considered as alternatives when artificial pneumothorax is impracticable. If the disease has reached stage 3, thoracoplasty is the only alternative to a complete pneumothorax. The choice between apicolysis and thoracoplasty rests entirely on the extent of the disease. Apicolysis should be confined to those cases only in which the disease is limited to the upper lobe. It is eminently suitable to that form of chronic disease in which one sees radiologically the upper lobe extensively fibrosed and sharply delineated from the middle or lower lobe.

Hæmorrhage may occur in any stage of the disease, and is always an indication for artificial pneumothorax unless there are contra-indications. The peace of mind obtained for the patient when he or she can be assured that bleeding is no longer to be feared is, in itself, sufficient to justify the treatment.

Contra-Indications.—The contra-indications to pneumothorax and thoracoplasty are much the same, except that for the major operation they are somewhat more stringent and more rigid. It is easily understandable that albuminuria, glycosuria, and intestinal tuberculosis are such unfavourable complications that to embark on surgical treatment when any of these are present would be most unwise. Laryngeal tuberculosis, on the other hand, is not a contra-indication unless very advanced and associated with extensive ulceration or involvement of the epiglottis. Advanced intestinal stasis and nervous or neurasthenic temperaments are likely to interfere with the success of surgical treatment. The danger with stasis is in the violence of the reactions it may give rise to after refills with gas, and the greater likelihood of pleural effusions. Myocarditis and a rapid pulse due to constant toxic absorption are not contra-indications, but a failing heart is. All these things have to be ascertained before we can decide as to whether the opposite lung is sufficiently clear, or not too extensively involved by active tuberculosis or fibrosis to justify pneumothorax or thoracoplasty on the more extensively affected side.

We have to consider extensiveness of the disease (1) as it affects pneumothorax; (2) as it affects thoracoplasty.

(1) *Extensiveness of the Disease on the Opposite Side when Complete Collapse of the One Lung by Pneumothorax is Contemplated.*—Certain general principles only can be given, as it is extremely difficult to define in words the exact maximum amount of disease in the opposite lung which can be allowed; this is influenced by the whole general summary of the case one forms in one's own mind. Activity in the opposite lung is not a bar, but it must not be acute. Fibrosis may be present, but it must be localised. Scattered foci of infection throughout the lobes, the presence of

a cavity or of definite bronchiectatic changes are contra-indications. There must be at least two-thirds of healthy lung tissue. Reference must be made here to bilateral pneumothorax. In these cases not more than two-fifths of either lung is collapsed. The danger in these cases is heart failure. Bilateral pneumothorax is sometimes undertaken for bilateral disease, the collapse on the second side being started soon after that on the first. I am not much in favour of this, but I have undertaken partial bilateral collapse, beginning the treatment on the second side some six months after the first. In none of these cases was the bilateral pneumothorax conceived at the onset. Rather the second side has been started because treatment of the original side had not succeeded in arresting the progress of the disease in the other, but had been successful in arresting the disease in the collapsed lung.

(2) *Extensiveness of the Disease in the Opposite Lung as it affects Thoracoplasty.*—As a general rule it may be said that a much higher standard of soundness must be considered as essential. Some continental surgeons do thoracoplasty even when there are signs of activity in the opposite lung. Personally, I prefer that the lung which is called on suddenly to take on all the functions of respiration and oxygenation of the blood shall be free from signs of activity at the time of the operation.

I would urge that it is impossible to diagnose suitability on clinical evidence alone. The decision should be arrived at only after consideration of the general condition, the clinical and radiographical evidence of the extent and acuteness of the disease, a knowledge of the state and functioning capacity of the cardio-vascular system, of the degree of intestinal stasis, and of the state and functioning of all the other organs in the body, and of the mental temperament.

Finally, I would remind you of the brilliance of the results of surgical treatment. Of the cases in which a complete pneumothorax has been obtained without there being any adhesions, over 70 per cent. become fit to return to work; this high percentage is reduced to between 11 and 12 when adhesions interfere seriously or completely with the production of the pneumothorax. Of the patients on whom a thoracoplasty has been done, from 50 to 60 per cent. are "relatively cured," are free of symptoms, or much improved. The mortality of this operation is just over 8 per cent. (Gravesen, 8·6 per cent.; Jacobæus and Hey, 8 per cent.; Morriston Davies, 8·3 per cent.). The resulting deformity is surprisingly slight and is easily concealed by ordinary dress.

THE SPORE-FORMING BACTERIUM ON RICE-GRAINS

USED BY FAMILIES SUFFERING FROM BERI-BERI AND EPIDEMIC DROPSY.

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SAMPLES of rice-grains used by families suffering from beri-beri and epidemic dropsy in different localities—viz., Howrah and Prome in Burmah—were kindly supplied to me by Major H. W. Acton, professor of pathology, Calcutta School of Tropical Medicine, for purposes of microtome section and appropriate staining.

Isolation of Bacterium.

During the investigation it was found that a spore-forming bacterium readily grew in cultures of "diseased" grains of rice (i.e., such grains as show a white streak inside when put in contact with water for two or three minutes) in agar medium, when the outer surface of the grain was sterilised by dipping in 95 per cent. alcohol for two or three minutes and washing in sterile distilled water for five to eight minutes, or by keeping in pure carbolic acid for five minutes, transferring to rectified spirit for 10–15 minutes until all traces of carbolic acid were removed, and finally, washing in sterile distilled-water tubes plugged with cotton-wool for 10–15 minutes; in both the methods followed the grains were carefully broken up with the help of a sterilised scalpel, and the broken pieces introduced into the agar media. Under similar conditions the same spore-forming bacterium was found in cultures from those grains of rice which did not show the white streak when put in contact with water. Subsequently it was found that the same bacterium ultimately grew on common market rice of Calcutta in agar media. This naturally aroused suspicion, and the slides containing the bacteria in question were sent to Mr. C. M. Hutchinson, Imperial Bacteriologist, Pusa Research Institute, for determination. He thought they were probably the spore-bearing forms of *B. subtilis*, a very common contaminating bacterium growing on the outer surfaces of fruits and seeds due to imperfect sterilisation.

Sterilisation.

They were proved to be so by adopting the following better method of sterilisation: The grains were dipped in 1/1000 corrosive sublimate and 95 per cent. alcohol for about three to four minutes, kept for two hours in sterile test-tubes of distilled water, poured out into a sterilised glass plate, and introduced into the agar media by means of sterilised forceps, some broken and others unbroken. The cultures were repeated on five successive days at the rate of four cultures a day. No growth was noticed in any tube. Subsequently, 95 per cent. alcohol was omitted altogether, and the rice-grains were dipped simply in 1/1000 corrosive sublimate for about three to four minutes; the subsequent steps were the same, and no tubes became infected though they were kept for weeks together. In case of broth cultures it was found that dipping of rice-grains in 1/1000 corrosive sublimate for six minutes was necessary to maintain the sterility of cultures. Anaerobic cultures were also tried in broth-paraffin media, and they also remained perfectly sterile.

Rice-grains from the stores of diseased families, and grains of common healthy rice, were boiled in water for an hour and a half and then put in agar tubes; in two days they gave rise to abundant growth of the same spore-forming bacterium, probably *B. subtilis*. If the grains were immersed in 1/1000 corrosive sublimate for four minutes before boiling in water for the same period, and agar tubes were inoculated with the grains, no growth was found in any tube. This showed that the spores are not destroyed by the ordinary method of cooking rice, and are ordinarily taken with rice diet without any harm.

The penetrating power of 1/1000 corrosive sublimate (watery as well as alcoholic) into the rice-grains was tested; it was found to have no penetrating power, and to be unable to enter into the rice-grains in any way. A control was kept of grains not dipped in corrosive sublimate, and the internal parts of the grains looked just the same in both the cases.

Germination Test of Gram Seeds Dipped in Corrosive Sublimate.

To show that dipping of gram seeds in 1/1000 watery corrosive sublimate has no deleterious effect on the living cells of the embryo within (1) dry gram seeds, (2) dry gram seeds soaked in water for about half an hour, and (3) water-soaked swollen gram seeds after being peeled off their skin, were dipped in 1/1000 corrosive sublimate for four minutes, separately washed thoroughly in water for more than an hour, and separately planted in earthen tubs, Nos. 1, 2, and 3. Germination into seedlings went on quite unhampered in all three tubs, and very soon normal and vigorous seedlings developed in all of them; growth was more especially marked in tub No. 3. This proved that dipping of gram seeds in 1/1000 corrosive sublimate has no deleterious effect on the living cells of the embryo within.

Time Required for Killing the Spores with Corrosive Sublimate.

A loopful of broth culture of this spore-forming bacterium was dipped in 1/1000 corrosive sublimate in a test-tube, out of which a loop was taken at intervals of six minutes, ten minutes, and 20 minutes, and these were put separately in large volumes of broth media in big flasks. These media, tested after three days, showed no growth, indicating that the spores were killed.

Inoculation of Healthy Rice.

Market rice-grains autoclaved in a big petri dish were inoculated with saline emulsion of the spore-forming bacterium from fresh agar slant. The dish was kept in a glass vessel containing water at its base under the cover of a bell-glass to maintain the humid atmosphere. In course of three days the grains became heavily infected, and looked soft and cloudy all over, instead of showing one single white streak inside. When such grains were dipped in watery corrosive sublimate 1/1000 for four minutes, and washed in sterile distilled water as before, and were introduced broken with the help of a sterilised scalpel into the agar media, all the media remained perfectly sterile. But if these grains, after being dipped in 95 per cent. alcohol for two or three minutes, and washed in sterile distilled water, were introduced, aseptically broken, into the agar media, all of the tubes showed growth of the same spore-forming bacterium. Also, if the grains were boiled in water for an hour and a half and then put into agar tubes, all of them showed abundant growth of the same spore-forming bacterium. Such inoculated grains were fixed in cellulose acetate in acetic acid, imbedded in paraffin, and were sectioned in microtome 4 to 6 μ, sections were nicely stained with Gram's iodine, none of the slides showed the presence of a single bacterium inside. These spore-forming bacteria were found to be proteolytic by inoculating solid egg media with them, and watching the liquefaction of the solid media in course of four or five days, the sporing bacteria themselves thriving in such media.

Conclusions.

So it is likely that this spore-forming bacterium, referred to as proteolytic, as well as the fungi (Rhizopus, Aspergillus, and a Mucor), mentioned in an editorial article in the *Indian Medical Gazette*, October, 1922, under the heading Epidemic Dropsy of Bengal—A Problem Solved, are only external contaminators. Their presence in the culture-media might be due to incomplete sterilisation of the outer surfaces of rice-grains as well as of almost all other fruits and seeds. Rice-grains in gunny bags are invariably stored almost in every house and shop in more or less damp, partially dark, ground-floor rooms and store-houses, where the temperature and humidity are usually high during the rainy season; a large number of grains damaged by boring insects are frequently found with healthy unbroken grains, and very few people take care to separate one sort from the other.

Under these circumstances it is inconceivable how, the organism being the same (the same spore-forming bacterium being present on the outer surfaces of both healthy and diseased rice), the conditions of development being the same—viz., high range of humidity and temperature—and the substratum on which the organism develops being the same (damaged grains being almost always present in a collection of healthy grains however small), it can in some grains succeed, and in others completely fail, in producing bodies (? amines) giving rise to epidemic dropsy. So long as no special conditions are made out, we must discredit this chance production of amines as a cause of epidemic dropsy.

My thanks are due to Dr. Charu Chander Bose, Professor of Pathology of the Carmichael Medical College, for many valuable suggestions in the course of my work and for kindly going through the entire manuscript with me.

A CASE OF SPONDYLITIS DEFORMANS IN A KINKAJOU.

BY N. S. LUCAS, M.B., CH.B. OXF.,
PATHOLOGIST TO THE ZOOLOGICAL SOCIETY OF LONDON.

Spondylitis deformans is by no means common in man, and is apparently almost unheard of in the lower animals. There is a case recorded by Backmund as having occurred in the horse, but it has not been possible to verify the reference.[1] The kinkajou (*Potos caudivolvulus*), hab. Brazil, is one of the Arctoids—that is to say, it is placed between the coatis and the racoons. It is therefore closely related to the bears. Although strictly speaking a carnivore, it is actually a vegetarian, subsisting chiefly on fruit. It obtains

FIG. 1.

General aspect of the deformity. A, Ossified interspinous ligament. B, Foramen unaffected.

the name of "caudivolvulus" from its powerfully prehensile tail. It is nocturnal in its habits. The history of the case throws no light on the origin of the disease.

The animal, a female, had been at the Zoological Gardens from 1917 to the end of 1923. The previous owner had kept it for over a year. It had been bent and rigid all the time. When walking it had the appearance of an inverted U, the knees and elbows being kept extended. The flexed position of the spine caused the head to be approximated to the abdomen with the snout pointing straight downwards. The prehensile power of the tail was fully maintained. It was decided that it was necessary to destroy the animal, but previously to this it was X rayed by Dr. W. L. Salmond, hon. radiologist to the Zoological Society.

The radiograph showed well the calcification of the anterior common ligament, especially in the lumbar region, and a gap opposite the juncture of the thirteenth and fourteenth dorsal vertebræ, which was subsequently verified in the skeleton. Unfortunately the cervical vertebræ were obscured by the assistant's hand holding the animal, but the importance of the X ray lay in the fact that the knee, ankle, elbow, and wrist were all shown as healthy, as were the metatarsals.

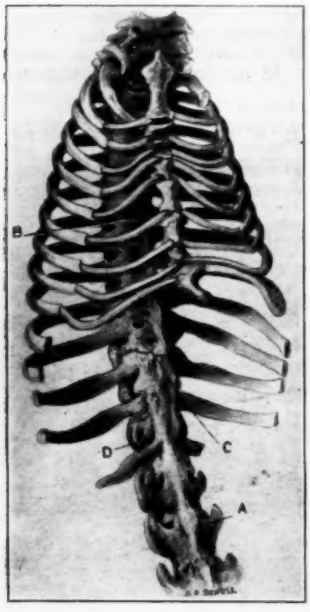
The animal was killed and a post-mortem examination of the viscera showed no abnormality in them. The body was fat and the coat in good condition. The hip- and shoulder-

[1] Deutsche tierärztliche Wochenschrift (Hanover), 1910, 486.

joints were dissected and found to be healthy. The body was then macerated, and the skull, vertebral column, pelvis, and the proximal half of the tail mounted as in Fig. 1, showing the general posture. The skull and atlas vertebra separated during maceration, and some of the teeth, which had been previously noted to be healthy, were lost. The rest remained intact.

A close examination of the bones showed that the skull and the caudal vertebræ, except the first three, were healthy; these parts were white and smooth, while the rest was a dirty grey, with rough surface. The pelvis was grey. The teeth were healthy except the left lower canine and the bicuspid posterior to it, which were black and worn, but apparently had only recently become so.

FIG. 2.



Drawing of anterior view. A, Anterior common ligament calcified. B, Gap in its calcification. C, Incomplete calcification. D, Foramen not affected.

With regard to the vertebræ, the atlas was free and the axis nearly so. The remaining cervical vertebræ were joined by ossified intertransverse and interspinous ligaments. The inter-vertebral discs are small but distinct between vertebræ 2, 3, and 4. The lower ones are less distinct owing to ossification of the anterior common ligament. Between the first four thoracic vertebræ the inter-transverse ligaments are ossified. Between the remaining 12 the inter-spinous and anterior common ligaments are also calcified completely, except for small gaps in the latter (see Fig. 2). The ossification between vertebræ 13 and 14 is not complete, bearing out the radiographic finding. The capsular ligaments of the ribs are all calcified. The lumbar vertebræ are all ankylosed except the last. The articulation between this and the sacrum appears normal. The inter-spinous ligaments of the first two caudal vertebræ are calcified. The cartilages of the hip-joints and the head of the femur appeared normal, but there was early ossification of the capsular ligament, as shown by bony outgrowths round the site of its origin. The deformity of the sternum was well marked and is of postural origin.

In attempting to put this case into one of the recognised groups the difficulty is encountered of the ignorance of early history and symptoms. It is not an ordinary rheumatoid arthritis, as the absence of disease from the cartilages and the freedom of the peripheral joints from disease are not in line with this type. The next group, von Bechterew's, "la kyphose hérédo-traumatique," is also unlikely, as the lesions in this group are chiefly in the cervical and upper dorsal vertebræ. In the specimen the lower thoracic and lumbar vertebræ are most affected. Further, it is unlikely that the animal would have survived the meningitis which accompanies this form; also there were no signs of nervous lesions, and the spinal foramina are not narrowed. Therefore the Strumpell-Marie type, "spondo-rhizomelique," with the chief site of the lesion in the lumbar vertebræ, is the most suitable group in which to place it.

The origin of the disease in any case is obscure, even in man. Here, at all events, gonorrhœa and syphilis can be ruled out. Heredity also is very improbable, since no animal with even a slight degree of this disease would be likely to survive in the wild state long enough to propagate its species. On the whole, therefore, an injury either just previous to or at capture is the most probable factor of origin.

UNUSUAL CUTANEOUS METASTASES IN CARCINOMA OF THE BREAST.

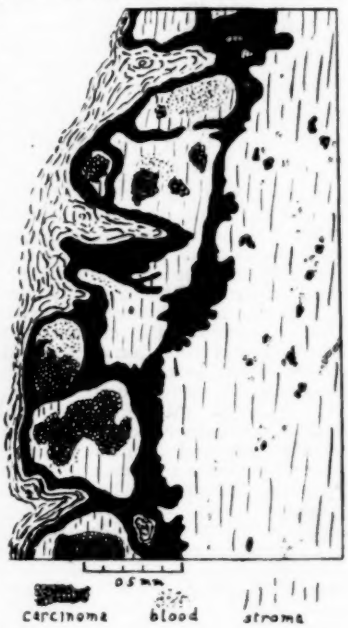
BY W. D. NEWCOMB, M.B. CAMB.,
ASSISTANT PATHOLOGIST, ST. MARY'S HOSPITAL, LONDON, W.

THE following case is of some interest from both the diagnostic and pathological points of view.

A woman, aged 73, was admitted to hospital in January, 1924, with a history of having had a blow on the left breast five years previously. In July, 1923, she noticed that the breast on that side was shrunken and discoloured. This discoloration spread over the whole chest wall in two or three months.

Condition on Admission to Hospital.—In the left breast was a hard lump about 3 inches in diameter, with an ulcer 1 inch in diameter in the centre. The crater of the ulcer was where the nipple had been. Multiple dark nodules, varying in size from 0·3 to 4 c.m. diameter, were seen over the whole of the chest; most of these were raised above the skin, while near the right breast were several larger warty growths. The left arm was swollen and painful, and a mass of glands was felt in the left axilla. The pigmentation of the cutaneous nodules was so noticeable that the condition was diagnosed as melanotic sarcoma by the surgeon in charge of the case. She died on Feb. 1st.

Post-mortem Examination.—This was performed on the day the patient died. The condition externally was practically the same as on admission. The mass of glands in the left axilla was found to have involved the axillary vein, which was thrombosed. Secondary growths were found in the left cervical and subclavicular lymphatic glands and in the liver. None of these growths was pigmented. On examining the skin carefully, it was noticed that while many of the nodules were deep purple, others showed a range of colours from lighter purple to pale pink. On cutting across a few of them it was obvious from the oozing that the colour was due to blood and not to a melanin pigment.



Microscopically the primary growth is a carcinoma simplex of the breast, consisting of rather large polygonal cells arranged in solid alveoli and trabeculæ. The skin nodules are more interesting. The larger ones show a papillomatous overgrowth of squamous epithelium lying on a core of secondary carcinoma. In some places the carcinoma appears to have formed small cysts in the epidermis itself, many of these cysts containing blood as well as growth. Serial sections show that they are not true cysts, but that the carcinoma has grown along lymphatics up to the surface epithelium and has then mushroomed out. At the same time the epithelium has grown even more rapidly, and the space between it and the carcinoma is filled with blood.

Many of the most deeply pigmented areas are but slightly raised above the surface. These show little proliferation of the squamous epithelium, but the carcinoma is growing in dilated capillary spaces. These spaces again are much too large for the small nodules of carcinoma growing in them, so that in many sections they appear simply as dilated capillaries filled with blood. In fact, the picture reminds one of a cavernous hæmangioma. It can be shown, however, that carcinoma cells are growing into all these blood spaces. In other areas numerous newly formed capillaries can be seen near small groups of carcinoma cells. This formation of new capillaries is quite abnormal, and is a prominent feature of some of the sections.

The accompanying semi-diagrammatic figure shows the proliferation and hyperkeratinisation of the surface epithelium which is drawn dead black. Masses of carcinoma can be seen apparently growing in cysts in this epithelium, and two of these cysts contain blood. In the dermis several small groups of carcinoma cells are shown with many new-formed capillaries near them.

Two features stand out in this case: (1) The proliferation of the squamous epithelium over the carcinoma instead of the usual ulceration. I have not seen this before, nor have I been able to find a description of it. Erichsen[1] describes a brownish discoloration of the skin, with the formation of desquamating crusts resembling the bark of a tree. This, however, would not appear a suitable description of this case. (2) The proliferation of vascular endothelium. Although it has not been possible to demonstrate any heaping up of endothelium, the formation of new small capillaries and of large dilated blood spaces must mean, at any rate, slight endothelial proliferation.

Drew [2] has shown the presence of a growth stimulating substance in carcinomata, and it is well known that sometimes the inoculation of a mouse with mouse carcinoma stimulates the stroma to produce a sarcomatous type of growth. It is possible that this is one of the rare cases in man where a similar condition has occurred. The carcinoma has caused a hyperplasia of both the squamous epithelium and the vascular endothelium.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF PSYCHIATRY.

THE LAW REGARDING CRIMINAL RESPONSIBILITY OF THE INSANE.

AT a meeting of this section on May 13th, under the presidency of Dr. T. B. HYSLOP, the subject set down for discussion was the proposed changes in the law regarding criminal responsibility of the insane.

Mr. DONALD CARSWELL opened with a presentation of the legal aspect of the question. He said the rules in the famous McNaghten case expressed the present law of England on this matter, and that there were only two points touching the credit of the McNaghten rules. The first was that those rules were unique in English law in that they had acquired the force of law without previous Parliamentary enactments or judicial decisions; they were merely the opinions of 14 out of 15 common law judges on certain questions framed for them by the House of Lords in 1843. He thought it was questionable whether those judges expected that their opinions would pass into English law. Neither had the rules been argued before the Court of Criminal Appeal. That court had not affirmed them on their merits. The second point was that it remained for the late Dr. Charles Mercier to show that the questions framed by the House of Lords were not those which in fact the judges answered; they substituted questions which they were able to answer.

The question being discussed at the present time, he said, was whether those rules should continue to have the force of law. Many were not satisfied that the rules ensured or secured certainty. It was said that without some more or less arbitrary guide, such as the McNaghten rules, there was likely to be a hopeless muddle. The alienist truly said that insanity was a relative term, and he only regarded his general experience of mankind; it was not enough for him that, relative to that experience, the patient who was suffering from general paralysis of the insane required a lunacy certificate. How could one define the criminal responsibility of the insane without inquiring into the whole concept of responsibility in general? Why should a mere statement of criminal responsibility involve a roving commission over the field of ethics? Punishment was given in accordance with the ethical standards prevailing at the time; there was no eternal and absolute standard. The great question to be answered was, did the McNaghten rules, according to our standards, do justice to insane persons who were charged with crime? If not, how was such justice to be secured? Mercier defined responsibility as that which was rightly liable to punishment, explaining that he meant by that, liable to punishment on grounds which appeared fairly just to the ordinary man when they were explained to him, and which commended themselves as equitable and right to the common man of this time and country.

Mr. Carswell went on to speak of the Memorandum submitted last year to Lord Justice Atkin's Committee on the subject by the Medico-Psychological Association, which the speaker considered not only of great interest, but also of permanent value. It was not accepted and acted upon, but he could claim it had not been answered. The conclusion of that document could be briefly stated as follows: No man should be liable to punishment for a criminal act committed during and by reason of insanity, and if it be proved that the act was committed during insanity, there was a presumption—which it was for the prosecution to establish—that it was committed by reason of the insanity. In other words, the jury must be instructed that they must not convict unless the prosecution had satisfied them that the insanity had nothing to do with the crime. The Atkin Committee asked how juries could be got to convict if this proposal were adopted. Mr. Carswell said he agreed with the Medico-Psychological Association's Memorandum, though he was in a minority amongst lawyers. He regarded the McNaghten rules, and all rules on the same model, as bad and useless anomalies, and calculated to defeat the ends of justice. The doctrine of irresistible impulse had achieved a larger measure of agreement between lawyers than had anything else, their agreement being that it was meaningless and impracticable, and that the sooner it passed into the limbo of vain imaginings the better. A great point about such impulsive states as epileptic insanity and puerperal mania was, not that the obsessions constituted irresistible impulses, but impulses resistible which had not been resisted. Such states did not carry immunity from punishment, but were just those in which a deterrent had the desired effect, as in the case of the soldier at the front tempted to run away, but the knowledge that he would be shot if he did kept him to duty.

The following point, he considered, ought to be put to the jury in such cases: Are you satisfied on a fair review of the evidence that the prisoner's act proceeded from a diseased mind? If so, you will acquit him; but if you think his act proceeded from pure wickedness of mind, you will find him guilty.

Discussion.

Dr. R. H. COLE said Lord Justice Atkin's Committee was to some extent hampered by having two separate medical reports, one from the British Medical Association as well as from the Medico-Psychological Association. In 1896 the feeling against the McNaghten rules was very strong, and the committee of that date set to work fully intending to advise that they be abrogated. But after giving a good deal of consideration to the matter they decided the rules could not be improved upon. Dr. Maudsley was the first medical man to attack those rules, and Maudsley's point was that at the back of the ordinary faculties of mind were the

[1] Erichsen: Science and Art of Surgery.
[2] Drew: Brit. Jour. Exp. Path., vol. iv., p. 51.

instinctive and emotional activities, which were largely responsible for criminal acts. If any attempt was to be made to tinker with the McNaghten rules, the speaker suggested that the question of defective reasoning should be left out, restricting the question to one of actual disease of the mind. He personally agreed that the rules should be abolished, and though eventual justice was done to the prisoner, he thought much injustice had been done to insane persons who committed criminal acts in the performance of the ritual attaching to a condemned prisoner on the capital charge, the judge meantime well knowing the ultimate goal was Broadmoor Criminal Lunatic Asylum. The Court of Criminal Appeal did much to undo the errors of juries, for the latter frequently gave little or no weight to medical evidence. In many cases the McNaghten rules hampered the medical man in giving his answers to questions. Logic required that degrees of insanity should be recognised, and that in minor degrees of that malady the person was not altogether irresponsible. The law must draw a hard-and-fast line, but the medical man could not say exactly where health ended and disease began. Doctors were not agreed on the subject of irresistible impulse, but it would help to have it included in the law of the land; the judges would see that it was not abused, and they were now more learned in medico-psychological matters than in times past.

Mr. A. H. TREVOR (Commissioner, Board of Control) expressed his agreement with practically everything Mr. Carswell had said. The first question which should be asked was: Did the man know right from wrong? If he did, did he know the nature and quality of his act? Many people who were insane committed crimes well knowing the nature and quality of their act, and who, moreover, showed they were capable of much forethought and cunning in planning and carrying them out. With regard to uncontrollable impulse, if the tests proposed were not complete, they should be done away with. He, the speaker, believed that as soon as a person was proved to be the subject of genuine mental disorder the whole question of responsibility went by the board. He did not desire to see any alteration in the Criminal Lunatics Act, 1884: that should be taken with the Trial of Lunatics Act, 1883. Under the latter, the defence which had to be proved was, that the person concerned was insane so as not to be responsible, not that he was so insane as to be irresponsible. He, and those who thought with him, considered that it was a blot on the law of England that the kind of thing brought about by the McNaghten rules should be permitted to continue.

Dr. J. CARSWELL (Commissioner, Scottish Board of Control) confined his remarks to two points. The first was that the claim made before Lord Justice Atkin's Committee by the Medico-Psychological Association, based, as he contended, upon the considered judgment of those best entitled to speak on the matter, amounted to this: that the fact of insanity should be put to the jury. In two cases certainly this was not done; the question put to the jury was, Was the person insane so as not to be responsible in law? He did not think Lord Darling's Bill would settle this controversy, nor, indeed, would any other measure on similar lines.

The PRESIDENT said that insanity was incapable of definition, so also was sanity; attempts to define one or the other revealed a narrow comprehension as the terms were indefinable, hence there could be no line of demarcation between the two. The same held good with regard to responsibility. Until a definition of responsibility was agreed upon it could not be said what irresponsibility consisted of. Unfortunately, the questions of insanity and responsibility were intermingled. Doctors were questioned in courts of law as to sanity or insanity, but they were not allowed to express any opinion as to responsibility, yet in that lay the crux of the question. Learned judges, in charging the jury, held that it was for them, the jury, to deal with the question of responsibility. All who had had experience of the courts would recognise that as the truth. With regard to the McNaghten ruling, one had often encountered cases in which this ruling had been applied to the criminal who did not come within its provisions at all, and the criminal, having been found guilty, suffered the extreme penalty of the law. He asked what the McNaghten ruling had to say about somnambulism, the dream-state, epileptic automatism, and various types of epilepsy, and replied that it had nothing whatever to say about them. It was pathetic to sit in court and hear a jury being charged to apply rules which had no bearing whatever on the case; it was quite a frequent occurrence. This early Victorian ruling of 1843 was applied indiscriminately to all and sundry. The ruling should be banished from the courts, and every case treated on its merits, medical witnesses being allowed to give evidence on responsibility, not on insanity alone. This subject could not be dealt with conclusively until Harley Street was recognised on the question of responsibility.

Mr. CARSWELL, in acknowledging a vote of thanks for his paper, referred to a case which occurred 20 years ago, involving an obvious miscarriage of justice from the application of the McNaghten rules. He felt very strongly that these rules ought to be done away.

TUBERCULOSIS SOCIETY OF GREAT BRITAIN.

A MEETING of this Society was held at the Margaret-street Hospital for Consumption on May 16th, Dr. ERNEST WARD, the President, being in the chair.

Mr. FRANK KIDD read a paper on

Tuberculosis of the Urino-genital Tract.

Tuberculous lesions occurred especially commonly in young, ill-nourished adults, at a time when sex life is very active. These lesions could be confined to the urino-genital tract, in which case the prognosis was better than if the patients had lesions elsewhere. Mr. Kidd confessed to a clinical impression, which he had not yet confirmed by laboratory tests, that the more chronic cases were infected by the bovine strain, and the more acute by the human strain. The disease often remained unilateral for a long time, and often when both kidney and testicle were infected the lesions were on the same side. Cases with tuberculosis of the kidney were often nursed too long before they were taken to the surgeon, because medical men throughout the country were not familiar with the cardinal symptoms. The presence of both pus and tubercle bacilli in the urine made diagnosis certain, but cases should be diagnosed long before these symptoms manifested themselves. Most cases at the onset showed frequency of micturition and pain, localised at the neck of the bladder, at the end of micturition. Wasting, anæmia, and fever were generally absent. It was difficult to find tubercle bacilli in the urine, and this should be injected into a guinea-pig in suspicious cases. Pain in the kidney was usually absent for a long period, and often if pain were felt it was the healthy kidney that ached; but this was a late sign. Renal colic was uncommon. Sudden hæmaturia might occur. The general condition of the patient was good at first, and pyrexia was absent, unless there were a secondary infection. As to the physical signs, it was hard to feel any enlargement of the kidney in the early stage; again, the larger kidney might well be the healthy one. An expert could feel a thickened ureter per rectum or per vaginam, but this was not easy for the inexperienced. In males tuberculous nodules might be found in the prostate or testicle. In these cases, unless the urine was quite clear of pus, cystoscopy

should be done at once. The presence of pus as well as of tubercle bacilli was of importance, since the tubercle bacillus might be filtered out through healthy kidneys. If the patient had pyuria it was necessary to get a specimen for examination, and the problem arose whether a catheter specimen was required. Nowadays the smegma bacillus could easily be distinguished morphologically by pathologists from the tubercle bacillus, and owing to the danger of setting up a secondary infection Mr. Kidd did not advocate passing a catheter in males. A much safer method was to use an ordinary irrigator with a urethral nozzle to wash out the urethra, and then to get the patient to pass urine into two glasses, using the second glass for examination. In females the catheter had to be passed, but the precaution should be taken to inject a weak antiseptic—for example, oxycyanide of mercury, 1 in 4000—before the catheter was withdrawn. In 30 per cent. of cases with renal tuberculosis pathologists were able to find bacilli. On the other hand, an expert could diagnose 90 per cent. or 95 per cent. of cases by means of a cystoscope, and this was the most certain method of diagnosis. When tuberculous infection was regarded as certain both ureters had to be catheterised. There was usually pus coming from one side to incriminate the kidney on that side. Functional tests should always be done. Mr. Kidd preferred the indigo test to urea-concentration tests, since he regarded it as dangerous to leave catheters in situ over a long period. Blood-urea was not a very useful test, since in his experience a positive result was only obtained in late inoperable cases, not in early operative ones. X rays were useful to confirm cystoscopic and pathological findings. Some patients were almost impossible to cystoscope, even with spinal anæsthesia, which was the most useful method in late cases with ulcerated and very sensitive bladders. When cystoscopy was not possible it was Mr. Kidd's practice to make a small incision of one inch in the middle line and to feel the ureters. If one were thickened the corresponding kidney was regarded as the infected one, and the patient had to run the risk of its removal. Differential diagnosis was mainly from *B. coli* infections. These were characterised by remissions and by high fever during attacks. Stone could be excluded by X rays. Patients with tuberculosis in other parts of the body should always be watched for frequency and pus in the urine. Spontaneous cure of renal tuberculosis was unknown, although some cases might live for 20 years or more. Apparent cures were not uncommon, and were due to the fact that individual lesions in the ureter may heal, and the ureter may become fibrosed and closed up completely from time to time: but if the case was carefully watched it would be found that infected urine bursts through again after a certain time. The operative mortality nowadays in the hands of competent surgeons was not more than 2 per cent.; in the 65 cases operated on since 1912 on which Mr. Kidd had founded his remarks that evening there had been no deaths. Thirty-eight had been followed up and were cured. Of these 28 had been traced quite recently, and had lived in good health for periods varying between 1 and 14 years. Nine cases were very much improved, eight were apparently cured, but had not recently been seen, ten were dead. In many of these cases the wound had healed by first intention, special operative methods to avoid infecting the wound having been taken. After-treatment was important. If the patients went back to work too early, or if they were not given adequate and suitable food, the mortality rose. Comparisons of results of surgical and medical treatment in these cases showed that results were much better with surgery. Wildbolz, of Berne, who had published a large series of cases with very good results, estimated that three-fifths of his cases became completely well, but that if the patient was not well in three years the chance of ultimate recovery were poor. Mr. Kidd quoted instances of women who had had a tuberculous kidney removed, and got through a subsequent pregnancy without harm.

Tuberculosis in the Testicle.

When both the kidney and the testicle were affected it was well to remove the kidney, since the testicle often cleared up, but when the testicle alone was infected Mr. Kidd was inclined to temporise, since these lesions often healed up quite well on tuberculin, or at least became quiescent. He only advised removal if (1) there was a kidney lesion also, (2) if tuberculin failed to act, (3) sometimes in bilateral tubercle if there was pain. He had no doubt himself that tuberculin had a specific action on tuberculosis of the ureter and testicle and especially on the bladder. It was even dangerous to give tuberculin to bilateral kidney cases, since the ureteric lesion might heal and become fibrosed so as to block up the lumen. He found Koch's new T.R. the most useful, and urged that too big doses should not be given; 1/100,000 up to 1/5000 mg. should be administered and never more than 1/5000. He had tried Dreyer's vaccine on one very early case with no success. He had had some success with artificial sunlight and with real sunlight in cases sent to Rollier at Leysin. As to preventive measures, he advised patients who had once been infected to drink only cooked milk and to keep away from acquaintances with tuberculosis; also not to go back to work too soon, and not to work too hard.

Discussion.

The PRESIDENT thanked Mr. Kidd for his masterly summary of a difficult subject. He said that tuberculosis of the lung was more common in France than in England. He wondered whether tuberculosis of the genito-urinary tract was also more common. He had understood that Dr. J. H. Sequeira and Dr. Louis Cobbett, working in different fields, both held that it was impossible to distinguish clinically bovine and human bacilli. He asked Mr. Kidd to explain what was the lesion seen in cystoscopy which enabled experts to diagnose tuberculosis of the bladder or urethral orifices so quickly. Was it a retracted ureter, and did not this sign also occur in *B. coli* infections? Dr. Ward had tried Dreyer's vaccine in two cases with no benefit to the patients.

Dr. T. Y. PEYTON asked whether Mr. Kidd meant to suggest that tuberculosis in the genito-urinary tract was primary? Since such wonderful results appeared to be obtained by surgery in genito-urinary tuberculosis, was it not possible that the present tendency was to concentrate too much on the constitutional element in the treatment of other forms of tuberculosis? He asked whether bacillæmia was often found after operation.

Dr. H. A. ELLIS had not been successful in differentiating bovine from human infection by clinical differences. He suggested that if Mr. Kidd sent the infected kidneys after removal to Mr. Stanley Griffiths, he would probably be glad to isolate the strain, and confirm or disprove the clinical diagnosis.

In reply, Mr. KIDD said that bacillæmia used to be not uncommon after operation, but nowadays it was customary to cauterise the end of the ureter, and also to take out a large quantity of fat with the kidney so as to avoid disseminating the infection. He could not give a picture of the bladder condition which suggested tuberculosis to the expert, but there was no doubt that it was easily recognised with practice.

THE LATE DR. W. SCOWCROFT, OF CHEADLE ROYAL. On May 17th, at the age of 70, Dr. Walter Scowcroft, of Cheadle, passed away at his residence, St. Ann's Cottage, Cheadle. After completing his academic career at Owens College Medical School, Dr. Scowcroft qualified as M.R.C.S. in 1879, and ten years later as L.R.C.P.I. He was a house surgeon in the Royal Infirmary, Manchester, and for some years assistant medical officer in the great lunatic asylum, known locally as "Cheadle Royal," of which, on the retirement of the late Dr. Mould, he became medical superintendent, an office he resigned a few years ago. Many old medical students at the University of Manchester will retain a pleasant recollection of Dr. Scowcroft, of the knowledge he imparted to them as lecturer on mental diseases, of the journey by coach to and from Cheadle, and of Dr. Scowcroft's unfailing hospitality.

Reviews and Notices of Books.

HISTORY OF THE GREAT WAR.

Medical Services, General History. Vol. III. By Maj.-Gen. Sir W. G. MACPHERSON, K.C.M.G., C.B., LL.D. London: H.M. Stationery Office. 1924. Pp. 556 + viii. £1 1*s*.

EACH volume of the medical history of the war, as one reads it, compels admiration for the skill and patience of the editor, who from the myriad threads of fact has woven so even and well-patterned a web of history. This volume deals with the evolution of medical organisation in the field. In the common conversation of the profession, medical organising power is usually given second place to advanced surgical or medical skill. Yet the ablest surgeon is no help to a man lying wounded five miles away in the middle of a muddy field, and it is the organiser who brings the patient quickly to the surgeon specialist whom he has already provided with a well-warmed and well-lighted operating theatre and all necessary equipment. The skilled surgeon saves men by dozens in the day; the skilful organiser may bring relief to thousands.

In this section of the History we learn how it was managed. The regimental stretcher-bearers go and find the wounded and bring them to the doctor at the regimental aid-post; whence the field ambulance-bearers take them to the main dressing stations, whence the motor ambulance convoys remove them to the casualty clearing-stations of the division, through which they reach the hospital trains. Only very precise and well-considered arrangements made in the Fourth Army before the battle could have relieved its casualty clearing-stations of 14,936 wounded on the third day of the battle of the Somme in 1916. Motor ambulances and other modern devices, indeed, made this possible, but all have behind them the devotion of the men who, in relays every 600 or 800 yards, sheltered perhaps as they waited by derelict tanks, carried the stretchers at the front. Knee-deep in mud they were on the Somme. And it was not only mud they met: as they carried the wounded across the Piave in 1918 they were waist-deep in the river. In Palestine at times the mud was so deep and universal that only camels, with their soft, spreading feet, could cope with it. In early 1918 in Palestine the troops were on half rations in the heavy rains, and two mounted divisions and a brigade, and 4000 horses besides, had to be sent back temporarily to the advanced base, as food could not be brought up for them.

The editor tells, and tells with special approval, of the clever scheme of the D.D.M. of the XXIst (the Western) Corps, Col. E. P. Sewell, to provide for the care of the sick and wounded in the great advance (p. 449). This advance became notable later for the sickness that developed. The Desert Mounted Corps, in six weeks, sent back of wounded only 300, but 11,300 sick. This sickness was at first due to malaria, arising as soon as the troops got away from their well-protected stations, but later to influenza.

Influenza is first mentioned in France and in Italy in May and June, 1918; cases were only slight but sufficiently numerous to disable a division and prevent an already planned attack (p. 259). It is next reported from Syria and Damascus in early October, and about the same time it recurred both in France and Italy, but this time seriously complicated with broncho-pneumonia. Medical officers of hospitals were, of course, trying all the time to make their patients more comfortable, but sometimes their zeal would seem to have almost been excessive. A casualty clearing-station is supposed to have 23 tons of equipment transportable in eight lorries. After a long stationary period, one of these, being ordered to move, had 100 lorries' load of stores, of which 10 were road metal.

In reviewing the first of these volumes in 1922 we noted that the only person against whom an error of judgment was alleged was a civilian. This volume is more judicial, though in certain cases omissions may occur in allotting the credit due. In such a work these things are inevitable, though it is clear that great care has been taken to avoid them. For example, Lieut.-Col. C. Garner, mentioned without emphasis on p. 381, was the Director of Public Health in Egypt, who worked with such energy and success in coping with the difficulties of embarkation at Gallipoli (p. 370). The Egyptian medical officers of the Egyptian Public Health Hospitals are stated to have given the greatest satisfaction by their work, "both as regards the comfort of the patients and results."

An interesting and well-printed book, with excellent maps.

ORATIONS AND ADDRESSES.

By Sir JOHN BLAND-SUTTON, Consulting Surgeon to the Middlesex Hospital. London: William Heinemann (Medical Books), Ltd. 1924. Pp. 161. 10*s*. 6*d*.

Sir John Bland-Sutton has done well to publish in book form twelve selected orations and addresses which he has delivered in divers places and has published in sundry journals; and, seeing what an interesting and charming volume has resulted, we are gratified to remember that we had the pleasure of putting before our readers several of the most important chapters with their apt and amusing illustrations. The place of honour in the volume is given to the Hunterian Oration of 1923, which will long be remembered by those who heard it as a masterly description both of the range of work of John Hunter, the patron-saint of surgery, and of his personality. Sir John Bland-Sutton has followed Hunter's labours in all details and has, further, gone over much of the actual ground where those labours were carried out; in fact, the second chapter of the book describes Hunter's investigations in Portugal, mainly into bird life and the phenomena of migration. The Hunterian Oration is an admirable supplement to many previous orations, because it reveals so clearly the manner of man that Hunter was. He is seen to have been a practical worker of limitless curiosity and a philosopher capable of the largest generalisations, while he was an untiring researcher and scrupulous in all details, knowing that the largest inferences may derive from the smallest facts. But he was not a literary man; he read few books and had no gift of exposition. It is perhaps for this reason that year after year Hunterian lectures prove valuable; they serve not only their pious object of keeping Hunter's fame alive, but they supply the reasons for that fame which Hunter's own written work often left in uncertainty.

The President of the Royal College of Surgeons of England is a disciple as well as an admirer of the great John Hunter, for, as will be seen in this multifarious collection of essays, his curiosity in respect of pathological manifestations knows no limits, and while he is an accurate and reverent chronicler of the exploits of the past, he is abundantly ready to recognise the value of the work of to-day and its promise for to-morrow. The range of the essays is very large, and every man who has some conception of what biology means will find in them something informatory, challenging, or amusing.

VENEREAL DISEASE.

Its Prevention, Symptoms, and Treatment. Second edition. By HUGH WANSEY BAYLY, M.C., Hon. Sec., Society for the Prevention of Venereal Disease, &c. London: J. and A. Churchill. 1924. With 58 illustrations. Pp. 176. 7*s*. 6*d*.

THIS is the second edition of a well-known little handbook of which the first part deals with the prevention of venereal diseases, and the second with their description, symptoms, and treatment. The first is the more important, we presume, from the standpoint of the author, and puts forward his well-

known views as to prevention by means of self-disinfection. The position in regard to self-disinfection and its results is, we imagine, now well recognised by medical men and many of the laity and legislators. Mr. Bayly has set it forth here clearly, concisely, convincingly

The second part of the book is well written, and can only be a synopsis, but within these limits it is excellent. The whole of the work is easily intelligible by people who are not specialists in venereal diseases, and should be read by them with profit. We must regret Mr. Bayly's reference to his legal controversy with Lord Astor arising out of matter connected with the author's election campaign at Plymouth.

SUNSHINE AND OPEN AIR.

By LEONARD HILL, M.B., F.R.S., Director, Department of Applied Physiology, National Institute of Medical Research. London: Edward Arnold and Co. 1924. Pp. 132. 10s. 6d.

A COMPENDIOUS study of the effects of sunshine and open air has long been needed and is specially welcome when it appears in comprehensive, concise, and readable shape. Dr. Hill begins with a few pages about that paradox of nature, the Alpine winter climate, which has the remarkable property of simultaneously scorching and freezing the body. These two factors, although unpleasant when acting independently, yield a resultant which has the rare quality of being both delightful and health-giving. Further considerations lead the writer to the conclusion that the least healthy surroundings are those which involve cold feet and warm humid air. These conditions are all too common in modern houses where cold draughts chill the feet while the head is surrounded by warm stagnant air. In these circumstances the nasal mucous membrane becomes boggy, congested, and covered with thick secretion. The Alpine climate provides the contrary condition; the air surrounding the head is cool, while the feet are on ground which is well warmed by the sun. The mucous membrane of the nose is pale, taut, and free from secretion, infection being guarded against by a free flow of lymph, which evaporates as soon as it reaches the surface. Dr. Hill considers the expression "catching a cold" to be misleading, and explains the popular belief that draughts are the cause of colds by the fact that during the initial period of the infection there is slight fever and consequently increased susceptibility to cold. He believes that the resistance of the lungs to disease is increased in a similar way by Alpine air, which causes increased evaporation from the respiratory membrane and consequently a greater flow of blood and lymph.

In the chapter on sunshine, Alpine and English climates are again contrasted, and it is found that the Swiss health resort Montana has about as many hours sun in winter as England has in summer, and that the intensity of sunlight, as measured by its capacity to heat black fur, is about the same in a Swiss December as it is in an English July. This difference is due to the greater clearness and dryness of the air at high altitudes; 75 per cent. of the sun's rays reach an altitude of 6000 feet, while only 50 per cent. reach sea-level, and in a smoky city the amount may be reduced to one-third or less.

With regard to the biological action of light, Dr. Hill has repeated Weissner's experiments, which appeared to show that infra-red rays possessed a bactericidal action quite apart from the heat they produced. The conclusion reached was that when the temperature of the bacteria was carefully controlled infra-red rays have no lethal effect. The ultra-violet rays are strongly bactericidal, but their penetrating power is so slight that this property cannot come into play even in the treatment of so superficial a lesion as lupus. Dr. Hill considers that the chief function of cutaneous pigment is to protect the body from ultra-violet rays. The red corpuscles of the blood also act as a screen and convert visible rays into heat. This reaction is believed by some to have considerable influence in the immunising power of the blood. Dr. Hill finally puts forward the theory that ultra-violet rays in damaging the surface cells of the skin stimulate the defensive mechanism of the body, white corpuscles and immunising substances being increased in order to deal with damaged cell products. The rate of metabolism depends to a large extent on the cooling power of the atmosphere, and this in its turn depends on the temperature and humidity of the air. A mist or fog feels cold, but its cooling power is low; on the other hand, the feeling of warmth and a high cooling power frequently accompany one another in the Alps in winter. The relative humidity of the air is not nearly so important for health and comfort as is the "physiological saturation deficit," which is the difference between the amount of water vapour in the air and the amount the air would contain if saturated at body temperature. Great increase in basal metabolism is characteristic of the open-air treatment of tuberculosis and is most beneficial to health. Dr. Hill emphasises the importance of wearing the lightest clothing that can be tolerated without shivering, as it must not be forgotten that however bracing the air its action will not be exercised through thick and impervious clothing.

This book is well worth reading, and although of particular interest to the medical profession, should be much more widely appreciated. Both medical and lay readers will find it full of interesting facts and permeated throughout with shrewd common-sense.

JOURNALS.

QUARTERLY JOURNAL OF EXPERIMENTAL PHYSIOLOGY. Edited by E. SHARPEY SCHAFER and Others. Vol. XIV., Nos. 1 and 2. London: Charles Griffin and Co., Ltd. 1924. Pp. 1–207. 20s.—The Effect of Pathological Sera on Plain Muscle, by Lena C. Adam.—Secretion by the Human Fœtal Kidney, by Evelyn E. Hewer. The time when the kidney first becomes functional is very obscure. By examining the kidneys of human fœtuses of different ages by means of differential staining processes, Miss Hewer concludes that the kidney in the human fœtus is certainly functioning as early as the twelfth week of development, and quite probably as early as the ninth week.—Animal Experiments on the Inhibition of Hæmolysis by Blood Serum, by Eric Ponder.—Measurement of the Diameters of Erythrocytes, by Eric Ponder and W. G. Millar. The authors describe in detail a method for the measurement of the red cells in the plasma of human blood, the cells being photographed under suitable optical conditions and measured from the negative. The error in measurement does not exceed 0·2μ.—The Spindle-cells in Frog's Blood, by L. J. Notkin.—Correlation between Area and Hæmoglobin Content of the Erythrocyte, by Eric Ponder.—Measurement of Colour-blindness in Terms of Wave-lengths, by H. E. Roaf. As a result of an examination of 28 cases of colour-blindness, it was found that the defect is always in the red end of the spectrum. Edridge-Green has found cases of shortening of the violet end of the spectrum, but actual shortening of the spectrum may be due to a different kind of defect than failure to recognise colour. The cases differ in the degree to which they fail to recognise differences in the red end of the spectrum. Some correspond to a cutting off of the spectrum to about λ6200, others require the spectrum to be cut off to about λ5800, and others require a reduction to about λ4800 before the diagram matches the one from which it was copied. The W-L λ5800 and λ4800 correspond approximately to those regions where the perceptible change in hue with W-L is most marked.—Sutherland Simpson contributes two papers on the effect of thyroidectomy on growth in the sheep and goat as indicated by body-weight and on the cutaneous system. The general conclusion is reached that loss of the thyroids and

parathyroids is tolerated much better and for a longer period in herbivora such as the sheep, quietly grazing in a field, than in the more active carnivora such as the dog and fox. In the case of the parathyroids the difference may depend on the characters of the intestinal flora.—G. W. Scarth contributes two papers, one on Colloidal Changes Associated with Protoplasmic Contraction, and the other on the Action of Cations on the Contraction and Viscosity of Protoplasm in Spirogyra. The chloroplasts of spirogyra, normally a gel, may be stimulated to undergo contraction along their long axis. This contraction is reversible. The chloroplast during contraction becomes more plastic until frequently solation takes place. The chloroplast is doubly refractive, due to a regular arrangement of molecules. In several ways the behaviour of protoplasm under the action of cations resembles that of a physical colloid.—Effect of Insulin on the Respiratory Exchange of Normal Animals, by B. R. Dickson, J. J. R. Macleod, and others. The decided rise in the respiratory quotient (R.Q.) in normal animals that have been starved or kept on a protein-free diet that follows the ingestion of carbohydrates does not occur in completely depancreatised dogs provided a few days have been allowed to elapse since the operation. It also fails to occur under similar conditions in severe diabetes in man. The failure of the R.Q. to rise in diabetes, coupled with the fact that the ingested sugar reappears in the urine, indicates clearly that the organism has lost the power to oxidise carbohydrate. This is due to the absence of the internal secretion of the pancreas. When insulin is administered to the depancreatised animal or the diabetic patient the R.Q. behaves as in a normal animal. Insulin not only affects the R.Q., it also lowers the blood-sugar, both when the sugar is at a normal level and when it is greatly above it. These two effects are coupled in the diabetic animal with a third—namely, it restores to the animal the power to deposit glycogen in the liver. The relation between the blood-sugar level and the deposition of glycogen and the oxidation of sugar in normal animals, following the administration of insulin, requires investigation. The authors' observations were made on rabbits and dogs. The results of the administration of insulin were not exactly the same in dogs and rabbits; the authors tabulate and discuss their results. The evidence would seem to indicate that the sugar which disappears from the blood, as well as the glycogen which disappears from the store of this material in the tissues, becomes converted into some intermediate form of carbohydrate, which has no reducing power, and is, therefore, not included in the sugar estimations. It was also found that both the total CO_2-combining power and the total amount of CO_2 of the blood are not significantly lowered as a result of insulin.—T. Graham Brown contributes his twenty-eighth article to the physiology of the nervous system, entitled "Absence of Algebraic Equality between the Magnitudes of Central Excitation and Effective Central Inhibition given in the Reflex Centre of a Single Limb by the Same Reflex Stimulus." The author defines his terminology, and the methods employed of obtaining reflex and other movements in cats—decerebrate and low-spinal, and his deductions from the experimental results.—In a short note W. D. Halliburton and D. H. de Souza describe certain actions of pancreatic juice on milk.

Reports and Analytical Records.

BYNOGEN.

(ALLEN AND HANBURYS, LTD., 37, LOMBARD-STREET, E.C. 3.)

THIS is a concentrated casein-glycerophosphate food, with an approximate percentage composition of sodium glycerophosphate 2 per cent., calcium 2 per cent., magnesium 1 per cent., soluble milk proteins 75 per cent., and soluble extract of malt and whole wheat 20 per cent. The preparation is clearly a substantial food, its effects as a tonic food being enhanced by the presence of the organic phosphates, which are well known to help nutrition. Further, it showed a distinct digestive action on starch, and the test for active enzymes gave a well-marked response. Clinical experience has testified to the value of Bynogen in debilitated conditions generally, and those recovering from severe illnesses have benefited by its employment. A fine, cream-coloured powder, it can be sprinkled on food or prepared as a liquid beverage, the dose for an adult being two or three teaspoonfuls with or after each principal meal. For children half the quantity is sufficient.

ENERGEN BREAD.

(THERAPEUTIC FOODS CO., WILLESDEN, N.W. 10.)

The exclusion of bread from the dietary is the most irksome of all restrictions to which the diabetic patient may be subjected in the effort to reduce the intake of carbohydrates. For this reason many substitutes, more or less resembling it in texture and flavour, have been placed on the market. Those most extensively used are gluten bread and similar products prepared from gluten flour. The processes involved in the treatment of wheaten flour to separate the starch from gluten are laborious and expensive, and for this reason few of the so-called gluten flours are satisfactory from the standpoint of low starch content. Absolute prohibition of starch, however, is no longer regarded as essential in diabetic treatment, the patient being allowed a proportion of carbohydrates in addition to fat and proteins, in relation to his tolerance of the former. This being the case, we think that the manufacturer should state the percentage of carbohydrate in his product, since this practice would be of great assistance to the physician in prescribing a diet.

The Energen bread submitted to us for examination was in the form of rolls each weighing 34½ g. (1¼ oz.). When analysed the following results were obtained:—

Altered starch (carbohydrate)	45·0 per cent.
Protein	36·0 " "
Moisture	9·5 " "
Fat	5·7 " "
Crude fibre	0·1 " "
Undetermined	3·7 " "

Ordinary white bread with a moisture of 36 per cent. contains about 53 per cent. of carbohydrates and 6–7 per cent. of protein, so that Energen is much lower in carbohydrates and higher in protein content. While it is true that no claim is made that Energen is free from starch, it is obvious that its use in cases of diabetes will require the supervision of the physician, and the patient should not be allowed to obtain the idea that it can be safely used in any quantities that appetite may suggest.

ATOQUINOL TABLETS AND OINTMENT.

(CIBA BRAND.)

(THE CLAYTON ANILINE COMPANY, LIMITED, 68½, UPPER THAMES-STREET, LONDON, E.C. 4.)

These preparations are put on the market through the English firm by the Pharmaceutical Department of the Society of Chemical Industry, Basle, and present an attempt to deal with uric acid by "getting it out of the system." Atoquinol or allyl-phenyl-cinchoninester has been used successfully with sodium bicarbonate and an increase in the amount of fluid consumed in cases where gouty symptoms were accompanied by urine loaded with uric acid, while the tablets of atoquinol have been of service in gouty urticaria. The tablets are supplied in tubes holding 20 tablets each containing 4 gr. of the drug, and the unguent in collapsible tubes at 20 per cent. strength.

ERRATUM.—An error and a misprint occur in the first line of the recently published report on Kalzana. This preparation was described as "identical with albulactin." The correct constitution was given immediately below, showing that Kalzana is a chemical combination between calcium lactate and sodium lactate. We regret the error which, we are informed, has created some confusion in our readers' minds.

THE LANCET.

LONDON: SATURDAY, MAY 24, 1924.

THE APPEAL IN THE HARNETT CASE.

THE judgment in the appeal by Dr. C. H. BOND and Dr. G. H. ADAM against the judgment entered by Mr. Justice LUSH in the action brought against them by Mr. R. S. HARNETT will have been welcomed by members of the medical profession with a sense of relief, and read by few with any surprise. The judgment, which was given by the Lords Justice BANKES, WARRINGTON, and SCRUTTON, allowed the appeal of Dr. ADAM against whom £20,000 damages were awarded jointly with Dr. BOND, and ordered judgment to be entered for him. Against Dr. BOND in addition to the joint damages, were awarded £5000, and their lordships ordered a new trial in his case, Dr. BOND to have the costs of the appeal, the costs of the first trial, while following the ultimate issue, to be limited to such as would have been incurred if the original claim had been against Dr. BOND alone, and only for the period between the plaintiff's alleged detention at the Commissioners' office and his return to Dr. ADAM'S care (see p. 1072). The new trial is conditional upon Mr. HARNETT repaying the money already paid under the order of the Court below.

The result of the verdict and judgment in the Court below in the case of both defendants was contrary to the conclusions at which the ordinary citizen would have been able to arrive after the perusal of the evidence given in court, and it must have been felt by all that error had occurred in the administration and application of the law at a trial in which, no doubt, great sympathy was excited in the minds of the jury in favour of the plaintiff—for admittedly he had had bitter experiences. The generally important feature of the case, and the one which occupied the most prominent place in the judgment of the Court of Appeal, was the decision arrived at by the jury that Dr. BOND and Dr. ADAM should be held jointly liable to pay £20,000 as damages to Mr. HARNETT, in respect of his detention in a succession of mental homes from a date in December, 1912, to October, 1921. The alleged liability of Dr. BOND in this respect arose from his having detained Mr. HARNETT at the offices of the Commissioners of Lunacy for a certain number of hours, thus bringing about the return of Mr. HARNETT to the care of Dr. ADAM at Malling Place. Admission on Dr. BOND'S behalf that this action had no legal support under any provision for the care of the insane has rendered it necessary that there should be a fresh trial to determine the proper extent of Dr. BOND'S liability, and this matter will be subject to the observations of the Court of Appeal as to the remoteness of the damage for which compensation had been awarded. When judgment was given for £20,000, it had been held by Mr. Justice LUSH that the whole of the detention of Mr. HARNETT over a period of nine years might be attributed to the action of Dr. BOND in causing the revocation of Mr. HARNETT'S leave of absence on probation from Malling Place, or else to the joint action of Dr. BOND and Dr. ADAM in the same matter. No subsequent removal to any other place of treatment, no subsequent certification or other duty definitely imposed by the legislature, and performed by any doctor or official visitor up to almost the end of 1921, constituted a *novus casus interveniens* to break the chain of causation, and to relieve Dr. BOND and Dr. ADAM from the consequences of what the jury found to be a wrong view entertained by them as to Mr. HARNETT'S mental condition on Dec. 14th, 1912. It may be suggested that to find Dr. BOND and Dr. ADAM responsible for the whole of the nine years' detention of Mr. HARNETT was to place both of them, but more particularly the former, in the position of a judge who sentences a prisoner to a term of penal servitude, and to allot to the medical officers of the mental institutions in which Mr. HARNETT was afterwards confined, to the Commissioners and to their visitors no higher functions or powers than those of governors of prisons and visiting justices whose duty it is to keep convicts in custody and to see that they are properly treated. The jury at the trial were not asked to say what Dr. BOND'S position would have been if, honestly believing that Mr. HARNETT was not fit to be at large, he had sent him away, and if, through his happening to be in a worse mental condition than, in fact, he was on that afternoon in December, he had inflicted on others, or himself had suffered, some physical injury. As matters stand Dr. BOND has to face a fresh trial, knowing that a limit has been placed by the Court of Appeal to the liability arising out of his action. In the circumstances no further comment upon Dr. BOND'S case is permissible. Dr. ADAM, on the other hand, is to be congratulated warmly upon having obtained from the Court of Appeal a judgment which completely exonerates him from responsibility for such error as the jury attributed to him. The law relieves from liability in express terms a medical man who carries out duties such as his, using reasonable care in their performance. The jury found that when Dr. ADAM sent a car to fetch Mr. HARNETT back from Whitehall, he honestly believed that his late patient was not fit to be at large, but that in acting as he did he did not use reasonable care. It was urged at the trial that Dr. ADAM ought to have gone personally to fetch his patient, but the Court of Appeal brushed this point aside as magnifying the importance of an insignificant detail.

The result of the judgment should be that medical men charged with the duty of treating the insane, or of sending them to be treated, if they comply in spirit and letter with the law regulating such matters, will be able to act with such confidence as they possessed prior to the trial before Mr. Justice LUSH reached its unfortunate conclusion. They may and should be encouraged by a significant passage quoted by Lord Justice BANKES as coming from that wise and learned judge, Lord LINDLEY, who said in the course of a judgment dealing with the Lunacy Act of his day, that it had "given to justices of the peace and medical men wide powers, based upon the theory that they could be trusted."

PYORRHŒA ALVEOLARIS.

THE problem of dental sepsis is of importance alike to dentist and doctor, for since the work of Dr. WILLIAM HUNTER, the view that it is a common cause of general disease has taken a definite place in medicine. Now that the radiogram has revealed the frequent existence of apical rarefaction in pulpless teeth these lesions have somewhat overshadowed the significance of pyorrhœa as a cause of dental sepsis, and by implication, a cause of constitutional symptoms. Pathologically there does not seem to be any justification for this view. Clinical evidence would suggest that all forms of dental sepsis are a potential source of danger, though the fact that in many individuals gross dental sepsis may coexist with excellent health, suggests that the pathology of various dental lesions

is imperfectly understood: From the standpoint of the dentist, pyorrhœa and dental caries are the two chief agencies concerned in the destruction of the teeth, and the treatment of the former disease plays a large part in every dental practice. A series of articles on pyorrhœa, which appears in the *Dental Surgeon* of May 10th, affords an opportunity of reviewing the present state of our knowledge of this disease. This knowledge is meagre. The host of theories put forward to account for the causation of pyorrhœa, and the different methods of treatment in vogue are a sufficient index of our ignorance. It is not definitely settled whether pyorrhœa is a local condition, or whether it is a local manifestation of some general disturbance. In this country many dentists hold the view that it is a local lesion, in accord with the views put forward with so much cogency by Mr. J. G. TURNER.[1] But Mr. F. W. BRODERICK, who holds equally strongly that a faulty metabolism is an essential factor in the disease, would find not a few to agree with him in a view which, in the present state of our knowledge, is somewhat speculative and lacks the simplicity of the theory of local origin. Yet this simplicity may be only apparent and even misleading. It would be unwise to rest content with such an ætiology without exploring thoroughly the possibility of a constitutional element. Much has been heard lately in America of "traumatic occlusion" as an ætiological factor in pyorrhœa. It is thought by some that when teeth are in faulty occlusion the stress of mastication sets up an irritation of the periodontal membrane which permits subsequent inflammatory changes. A recent announcement in the lay press, couched in glowing terms, stated that DR. HAROLD BOX, of Toronto, had made a discovery of great importance. It would appear that this observer has investigated the patho-histology of the disease and believes that it may be explained by this conception of traumatic occlusion. The announcement was unauthorised, and criticism must await publication in a professional journal.

The bacteriology of pyorrhœa alveolaris is still obscure. An excellent review of the subject was given last year by Prof. E. GLYNN in a lecture under the auspices of the Dental Board and since published. Although GLYNN considers that streptococci are the chief pathogenic organisms in periodontal infections, he points out that evidence of specificity is lacking. Their invariable presence fulfils one of KOCH'S postulates—they can be cultivated, but these streptococci do not produce the disease experimentally in healthy animals. KRITCHEVSKY and SEGUIN believe on even less conclusive evidence that spirochætes are the causal organisms. BASS and JOHNS'S theory of *Entamœba buccalis* as the cause of pyorrhœa may now be dismissed; there can be no doubt that DOBELL is right in regarding this organism as a harmless commensal of the mouth. With so much unknown about the ætiology and pathology of pyorrhœa, it would be too much to expect unanimity of treatment. Different methods abound and are constantly increasing in number. Each has its enthusiastic adherents and for a time appears to possess magic properties. Each in turn drops out of sight. Clinical experience shows that there is no royal road to the cure of dental sepsis. Neither drugs nor ionic medication nor vaccine-therapy can replace careful instrumentation and mechanical cleansing of the teeth, though they may have ancillary value. Unless the patient is prepared to coöperate loyally in carrying out a definite régime of home treatment, the best efforts of the dentist are of little permanent avail. Much confusion has resulted from the different standards of "cure" adopted by various dentists. The essential lesion in pyorrhœa is a progressive destruction of gum, bone, and periodontal membrane. This leads to the formation of a pocket round the tooth which becomes an ideal receptacle for bacteria and putrefactive debris. A discharge of pus is often present, but is not an invariable feature, as the name of the disease would imply, neither can it be assumed that the presence or absence of pus is a trustworthy index to the gravity of the condition. There is no evidence to show that once the attachment of the periodontal membrane is destroyed it can ever be replaced. Thus conservative treatment may result in arrest of the disease and of its symptoms; there can never be a *restitutio ad integrum*. Conservative treatment, too, has its limitations. A pocket so deep that it cannot be obliterated or kept clean by the combined efforts of dentist and patient is a menace to oral and general health. Extraction then is the safest course. The days when the end and aim of the dentist was to conserve teeth at all costs have happily passed, to be replaced by a standard more consonant with surgical principles.

Vaccine-therapy forms an interesting chapter in the treatment of pyorrhœa. The latest development is to inject the vaccine locally into the gums. This method, introduced by GOLDENBURG, is based on BESREDKA'S assertion that in vaccine-therapy it is necessary for the vaccine to follow the path of the infection for which the treatment is given. FIELDEN BRIGGS, who has recently described[2] the technique, states that two cases under his care were cured. Much depends, however, on the meaning attached to the word "cure." Furthermore, a considerable time must elapse in order to show how far any improvement is maintained. Mr. ARTHUR BULLEID, in a careful paper in the *Dental Surgeon* dealing with the applications of immuno-therapy to dentistry, states emphatically that the vaccines must be autogenous. He divides dental sepsis into two classes: those in which there are no constitutional symptoms, and those in which the dental lesions are definitely associated with such symptoms. He considers that vaccine treatment is specially indicated in the second class, though he holds that in conjunction with local treatment they are often useful in the first group. Time alone must show whether the local injection of vaccines into the diseased tissues offers any advantage over their injection subcutaneously into a neutral area. Indeed, the whole question of vaccine-therapy in pyorrhœa is in a confused state. As BULLEID fairly points out, so long as no causal organism is isolated, vaccine treatment remains empirical, its value being determined by clinical experience. Since it is always associated with local treatment, it is difficult to distinguish the rôle played by the vaccine from that of the local treatment. There is much diversity of opinion among dentists. Some, like BULLEID, consider that vaccine-therapy, used carefully and with regard to bacteriological findings, will do undoubted good in some cases. Others of long experience, after having tested the results of treatment with and without vaccines, have come to the opinion that vaccine treatment is without appreciable influence on the course of the disease. Some who do not agree that the local symptoms are affected by vaccines think they may aid in curing the constitutional symptoms where present. It is evident that our knowledge of pyorrhœa on all points is far from final, for there is a wide divergency of view on the ætiology,

[1] Diseases of Periodontal Tissues due to Infection in their Relation to Toxæmia. 1923. Dental Board of U.K., Hallam-st., W.

[2] Brit. Med. Jour., Feb. 23rd, 1924.

pathology, bacteriology, and treatment of the disease. Yet the pessimism which might seem to follow on such a confession is not justified. We agree with Mr. BAYFORD UNDERWOOD, writing in the same issue of the *Dental Surgeon*, that though progress is slow it is definitely advancing. The dentist can even do something to prevent the disease from occurring in many cases by seeing that his intervention, both remedial and prophylactic, is directed to the prevention of food stagnation. The maintenance of nasal respiration is of great importance, for it is an undoubted fact that a healthy mouth cannot exist if mouth-breathing is present. In early cases much can be done by careful treatment, but to be effective the patient must coöperate wholeheartedly with the efforts of the dentist. Provided that intervention comes early before the disease is too far advanced, it is possible to arrest its progress and to ensure a functional mouth. The active and concerted research into dental disease which is now being carried out by the Medical Research Council in coöperation with the Dental Board should hasten the solution of some of these problems.

NEW FACTS IN THE ÆTIOLOGY AND TREATMENT OF MALARIA.

THE recent researches of Prof. WARRINGTON YORKE and Dr. J. W. SCOTT MACFIE, reported to the Royal Society of Tropical Medicine and abstracted in THE LANCET last week, not only fill in many gaps in our knowledge of malaria, but also furnish first-hand information for the guidance of the alienist inclined to test this remarkable new method in the treatment of general paralysis. Most of the work was performed with the benign tertian parasite (*Plasmodium vivax*), which, undoubtedly, is most suited for injection; the quartan was soon discarded on account of its extraordinarily prolonged incubation period, which may last as long as 54 days, while injection of the subtertian parasite (*P. falciparum*) produced in the solitary case in which it was tried a fulminating and fatal attack.

With regard to the natural history of malaria, so many new facts emerge that it is difficult at the present moment to appraise them all. The unicity theory of the origin of malaria, so tenaciously propounded by LAVERAN, has received its death-blow. There are three species of malarial parasites which invariably reproduce themselves on inoculation and remain true to type. Then, again, we learn that, contrary to expectation, the repeated subinoculation of malarial blood from man to man through more than 20 passages in no way alters the virulence or virility of the parasites, nor does the disease thus produced differ in any remarkable degree from that acquired by the bite of infected anopheline mosquitoes. In the treatment of this therapeutic malaria by quinine there is much cause for reflection, for the authors found, in accordance with previous workers, that inoculated malaria proved to be extraordinarily susceptible to the action of quinine—30 gr. a day for three consecutive days being found sufficient to sterilise the patient of his infection. This rapid action is forcibly contrasted with the experience of Prof. J. W. W. STEPHENS and his colleagues upon malarial infections contracted during the war. On the other hand, the alleged prophylactic effect of quinine receives a severe blow from which it can hardly recover, for we learn that from abundant experiments the administration of this drug before the bite of an infected mosquito is quite useless, and that its administration must be continued for at least ten days after the infecting feed to prevent the disease from developing. In other words, it is evident that quinine is entirely innocuous to the sporozoites, and the conclusion is reached that the drug exerts its maximum action upon the young trophozoites in the blood-stream, and it is, therefore, most effective in primary infections. The mechanism by which a cure is produced is ascribed to production by the host of immune bodies in response to the antigen formation resulting from the destruction of a considerable number of parasites.

However important the facts related above may be to the tropical worker, possibly of even greater interest to the practitioner in this country is the impartial statement upon the value of the malarial treatment in general paralysis. Of 84 paretics, who have been observed for a sufficient length of time, 27·4 per cent. have been discharged as provisionally cured, while an additional 20·2 per cent. show distinct mental and great physical improvement. The exact mechanism by which this desirable result is obtained by the malarial parasite is not at present by any means clear. If it is effected by a series of regularly repeated protein shocks we are left at a loss to understand how the cerebral sclerosis and the degeneration of the nervous tissue can be permanently affected. All who were privileged to listen to this paper will endorse the congratulation offered by Lieut.-Colonel S. P. JAMES, of the Ministry of Health, upon an important piece of research. The Liverpool School of Tropical Medicine has always maintained a reputation for accurate and conscientious scientific work, and this reputation has been fully maintained, if not augmented, by these remarkable and suggestive investigations, as well as by the lucid manner of their exposition.

HOSPITAL COÖRDINATION IN BIRMINGHAM.

As in other cities, hospital work in Birmingham has somewhat suffered from the multiplicity of institutions. Besides the two large general hospitals, the General and the Queen's with their special departments, there are numerous smaller hospitals serving special interests and making independent appeals for support. The two larger hospitals are connected with the medical school, but the clinical material at the other hospitals with some exceptions is not available for teaching students. For some time there has been a movement towards greater coöperation between the various hospitals. At the recent annual meeting of the Birmingham and Midland Hospital for Diseases of the Nervous System, the most recently founded special hospital, it was reported that a working arrangement had been made with the Queen's Hospital. Each hospital will retain its separate identity and management, but all appointments to the staff of the Nerve Hospital will be made by the Queen's Hospital and the whole of the medical work will be conducted by members of the staff of the Queen's Hospital. This will be a great advantage to both institutions, and the patients at the Nerve Hospital will be available for clinical instruction. An arrangement has also been made between the General and Maternity Hospitals. Heretofore both hospitals have had an external midwifery department, but in future the midwifery department of the General Hospital will be transferred to the Maternity Hospital, the hon. obstetric and hon. assistant obstetric officers at the former becoming members of the staff of the latter hospital. This scheme will prevent much overlapping and will help to reduce the economic burden. Important extensions at several of the hospitals are being discussed, and it is possible that other working arrangements will be entered into in the future. From many points of view it would seem to be an advantage for special hospitals to be closely associated as regards their medical work, but not necessarily as regards their management, with a large general hospital.

Annotations.

"No quid nimis."

THE FIRST DENTAL BOARD.

THE Dental Board of the United Kingdom was reminded by its chairman, Mr. Francis Dyke Acland, in his opening address on May 13th, that it was the sixth session and the final sitting of the First Dental Board. He thought that any impartial observer would agree that the past two and a half years of work had been carried through in an earnest and liberal spirit and in friendly coöperation. He could wish that the harmony and coöperation in the profession were as complete as it had always been in the Board. As a commentary on the opinion which he had heard expressed, that practically all persons who previously lived by the practice of dentistry had succeeded in becoming registered, Mr. Acland pointed out that, whereas between 12,000 and 13,000 forms were issued to applicants and nearly 11,000 applications were made, the actual number of dentists 1921 on the Register at the present time was approximately 7736. Probably a few mistakes had been made, but there was no doubt that those who were not justified in obtaining admission to the Register are finding it difficult to maintain their position upon it, and are tending to drop out. He congratulated the Board upon the fact that, although many of the cases submitted had required anxious thought, only two appeals had been entered against their decisions. During the first year of its work the Board had to take proceedings in a large number of cases with regard to "covering"; the fact that no complaints had been received under this heading for some time indicated the practical cessation of this practice.

The year 1923, Mr. Acland went on, was largely occupied in working out schemes for assisting in dental education aand research, although a beginning was made in the previous year, and of giving grants to ex-Service students who were not able to complete their courses by the assistance which they had received from the Government. Courses of lectures were arranged in the spring of 1923, and again this year, dealing with the higher branches of dental science, which had been very generally successful. Loans to students unable to complete their course without financial assistance have been made, and have been undoubtedly useful. The position of dental schools as regards accommodation and facilities for dental training was carefully examined, and, as a result, the sum of £16,000 has been earmarked to assist them. Good relations were established both with the Medical Research Council and the Department of Scientific and Industrial Research, and careful and thorough schemes of research are now proceeding, both on the scientific and on the practical sides of dental work. Towards the end of the year two new educational activities were developed, first by courses of lectures and instruction to new entrants to the Register, which were reported to be well attended and much appreciated; and, secondly, by a scheme of granting bursaries to students of slender means to assist them in taking a full dental course.

As regards prosecutions, proceedings were taken and pressed in 39 cases, convictions secured in every one of them, and fines and costs amounting to £272 and £58 respectively were imposed. The difficult question of arrangements between coöperative societies and dentists was approaching solution, owing to goodwill and common sense on both sides. The Board is now justified, Mr. Acland thinks, in assuming that all practitioners have had a full opportunity of realising the principles to be followed with regard to advertising and canvassing, and in dealing with cases which come before it on this assumption. Steps are being taken for an active campaign through the chief constables to put a stop to unregistered practice. Proceedings have been taken against unregistered persons treating pyorrhœa by prescribing a mouth-wash after examination of patients' mouths. The practice was held to be "giving such advice and treatment as are usually given by dentists," and fines of £100 were imposed.

In conclusion, Mr. Acland gave an estimate of probable future income and expenditure, in order that the Board and Parliament might be in a position to judge whether it would be justifiable to reduce the annual retention fee of £5 which is now charged.

"On the income side," he said, "we may estimate to receive about £45,000 a year, which I do not think will vary very much or very rapidly for some considerable time. I hope that the numbers entering the profession each year may slowly increase, but I think that any increase in this direction may be balanced by the fact that more advanced ages are probably unduly represented on the present Register, and that a good many now on it may find it difficult to maintain their position. Against the £45,000 income, I set first of all the sum of £12,000 to cover our standing charges, such as fees and travelling expenses of members of the Board, printing, salaries and wages, office expenses and legal expenses. The next item is £12,500 for educational and research work other than bursaries, and contingencies in connexion with such work. This is made up as follows:—

Research	£6000
Grants to dental schools	£3000
Propaganda as to the benefits of proper dental treatment	£1000
Post-graduation and Post-registration lectures and classes, and publications on professional dental subjects	£1500
Contingencies to cover inspection of examinations and the holding of prescribed examinations, &c.	£1000

"The two main sums make a total of £24,500, and leave a balance of £20,500 for bursaries. I estimate that a bursar may cost £130 a year, and therefore £20,500 will maintain about 160, or an entry of 40 a year for a four years' course. Before the war, an entry of rather over 250 students maintained a practising list of about 5000. On these figures the present Register of 13,500 will need an annual entry of 700 if it is to be maintained, and a considerably larger number if the practising list is to be raised to 16,000, which is the calculation on the basis of one to every three thousand of the population. The present entry, following upon a very heavy post-war rush, is, as we know, only a small one, but this will no doubt steadily expand. If the figure of only 600 entrants a year be regarded as within practical politics during the period which I am considering, it is clear that if but 40 students a year are helped, the percentage that this bears to the whole number is only between 6 and 7 per cent. I do not think that anyone can suppose that the number of young men and women who would make in every way competent dentists, but who cannot afford without help to enter the profession, will bear this low proportion of the whole number desiring to enter it. I, therefore, cannot regard the sum of, roughly, £20,000 a year for bursaries as being in any way excessive. If the fee were reduced by even £1 a year this amount would be approximately halved, and only 20 students a year could be assisted. Taking these circumstances into account, I am strongly of opinion that there is no sufficient justification for a reduction of the present retention fee. Dentists now on the Register will realise that, although they would have an almost inappreciable annual amount to gain by a reduction of fee, they would have later on very much more to lose if an agitation were to arise, owing to an insufficiency of fully qualified dentists, for the lowering of the standard of the qualification or the setting up of an inferior standard."

The remainder of the session was occupied with the consideration of penal cases.

FORENSIC PROBLEMS OF LETHARGIC ENCEPHALITIS.

THE Danish neurologist, Dr. August Wimmer,[1] has drawn attention to some of the very troublesome medico-legal problems to which lethargic encephalitis has given rise. With increasing knowledge of this disease it is becoming abundantly clear that its acute early stage is but the beginning of much worse things; it is the chronic sequel, the smouldering disease of the central nervous system, which is most to be dreaded. While psychic changes are comparatively rare in adults after an attack of lethargic encephalitis, adolescents and children seem very prone to develop moral and psychic faults which make them a nuisance and even a terror to their surroundings.

[1] Hospitalstidende, 1924, lxvii., 177.

In the experience of Dr. K. Winther, as many as 12 out of 25 children suffering from lethargic encephalitis developed more or less gross psychic disturbances. They may, in many cases, be fugitive and difficult to classify, and the boundary-line between the healthy and the morbid mind being often difficult to draw, the physician is hard put to it to know what to do with these patients. They may be too sane for an asylum, but not sane enough to remain at home. In ordinary hospitals they have no place, and considering how numerous these cases are, it may prove necessary to establish special institutions for them. Meanwhile, these patients travel from pillar to post, disturbing the peace, falling foul of the police, and being subjected to psychiatric examination and observation with little result and benefit so long as a more or less permanent resting place is not available for them. Dr. Wimmer illustrates the difficulties associated with such cases by an account of a patient aged 14. In August, 1920, he developed fever, drowsiness, delirium, ptosis, diplopia, and paresis of the right facial nerve. A month later signs of mental deterioration appeared. He was foul-mouthed and quarrelsome, spitting like a lama, and coaxing nurses to him only to strike them in the face or attempt improper approaches. A neurological examination was remarkably negative; his intelligence seemed to be unimpaired, and when he was discharged from hospital at the end of October, 1920, he seemed to have regained his normal mentality. He was readmitted to hospital in April, 1922, because of choreiform disturbances and erotic propensities. Systematic tests of his intelligence showed no gross defects, and he was discharged from hospital. In May, 1923, he again drifted into hospital, this time on the initiative of the civil authorities with whom he had come into conflict on account of assaults on young girls. He admitted that these assaults, or attempted assaults, were the outcome of momentary impulses, but a neurological examination showed nothing definitely abnormal. Cases such as this are so common that the problem of dealing adequately with them is most serious: to deprive such persons completely of their liberty seems hardly justifiable, yet to leave them uncontrolled is to invite tragedies such as that of Vera Hoad. Till we know more of post-encephalitic psychopathy and its prognosis, we run grave risks of being unjust to the patient, the community, or both.

THE SURGICAL TREATMENT OF PULMONARY TUBERCULOSIS.

IN an address, delivered before the Welsh National Memorial Association to which he is consulting surgeon, and published this week in our columns, Mr. H. Morriston Davies outlines the indications for operative treatment in pulmonary tuberculosis. For 10 or 12 years he has himself been performing various thoracoplastic operations, but only recently has he been able to get such work organised on a proper basis. Nevertheless, surgical methods should be available for rich and poor alike, and Mr. Davies contends that if surgical methods were generally adopted in sanatoria it would imply a large increase in staff and equipment. The results in his experience are brilliant. Of cases in which a complete pneumothorax could be induced, over 70 per cent. became fit to return to work and more than 50 per cent. of of his thoracoplastic patients were freed from their symptoms. Apart from other indications the artificial pneumothorax justifies itself by relieving a patient from the fear of a return of serious hæmoptysis. Surgical methods have had more vogue abroad and, thanks to the initiative and skill of Prof. F. Sauerbruch, the University Surgical Hospital of Munich has for many years been the leading centre for plastic operations on the lungs. A monograph[1] recently published by his assistant, Dr. Alfred Brunner, is an instructive summary of the advances made during 1918–22 in this promising branch of surgery. Important information has been gained during these years with regard to the technique of the operation and the avoidance of the many false steps, any one of which may convert success into disaster. As a considerable number of cases have now been operated on at Munich, and these cases have been carefully classified, it is already possible to define clearly the indications and contra-indications for thoracoplasty, and it is probable that many of the patients operated on a few years ago by Prof. Sauerbruch would, in the light of his more recent experience, have been considered unsuitable for this most exacting operation. Dr. Brunner's classification of the 117 cases, operated on in the period under review, brings this point out very clearly. In his first group there were 35 cases in which the disease was almost entirely unilateral, afebrile, and fibrotic; it had lasted for years and had shown a definite tendency to heal by fibrosis and retraction. In this group he had to record only three unsatisfactory results. Of the remaining 32 patients, six were improved, another 12 were rid of their tubercle bacilli, and 14 were cured. It would be no exaggeration to describe these results as brilliant. His second group included 43 cases whose characteristic features were a sub-febrile temperature, suspicious signs of activity in the opposite side, and other phenomena suggesting that there was an exudative element in the disease. In this second group he had to record two early and four late deaths, and five other cases in which the disease became worse or remained stationary. There were 14 cases showing improvement, 12 became sputum-negative, and six could be regarded as cured. It will thus be seen that 32 of the 43 patients benefited from their thoracoplasties. Far worse results were obtained among the 39 patients belonging to the third group, the distinctive features of which were rapid progress of the disease, a high temperature, and, in most cases, great general debility. None of these 39 patients was cured, and only 11 derived any benefit from the operation. This hastened the fatal issue in many cases, 21 of the patients dying within a year of the operation, and 10 of them in immediate connexion with the operation. Another lesson of Dr. Brunner's monograph is that this operation requires great practice and dexterity if it is to achieve the best results it is capable of; the duration of the operation is a most important factor, and the leisurely-fingered surgeon would do well to leave it alone.

[1] Die chirurgische Behandlung der Lungentuberkulose. Tuberkulose-Bibliothek. Leipzig: J. Ambrosius Barth. 1924. With 99 illustrations. Pp. 375.

HOSPITAL BEDS FOR CHILDREN IN SOUTH LONDON.

CHILDREN'S hospitals play a very important part in the health of the metropolis, yet the accommodation for this section of the community is most meagre. On the south side of the river there is actually only one cot for 12,560 head of the population, as compared with one cot for 3523 per head on the north side; and this difference is steadily increasing owing to migration of the occupants of demolished small tenements. Moreover, the population is poorer on the south side than on the north side. The annual report of the Belgrave Hospital for Children (Clapham-road, S.W.) for the year 1923, which has just been issued, clearly shows that of 1496 patients admitted to the wards during that year, some 600 came from Lambeth, about half that number from Wandsworth and Camberwell respectively, smaller numbers from Southwark, Battersea, and the remaining South London boroughs, while only 16 came from North London and 32 from places beyond. This means that 96 per cent. of the total beds in the hospital served the needs of South London and 86 per cent. the needs of the five boroughs in the centre of which the hospital stands, an indication of local usefulness which is something of a record. The total ordinary income of the hospital for 1923 was £9809 as compared with £8831 in the previous year, and the total ordinary expenditure was £9840

and £10,251 for these two years respectively, showing a drop of £411 for the year with which the report deals. The evidence of careful husbandry is grateful, but it is lamentable that economy should have to be so strictly enjoined. The medical report gives the percentage mortality of the 1496 patients in 1923 as 6·21 per cent., and of the 1152 patients in 1922 as 8·1 per cent. Of six patients operated on for congenital pyloric stenosis all but one recovered. The report should be studied and its lessons taken to heart by all those who control purse-strings on the right bank of the river which industry has rendered so unlovely.

EFFECT OF PATHOLOGICAL SERA ON PLAIN MUSCLE.

IT is well known that serum contains a substance which increases the tone and augments the rhythmical movements of surviving plain muscle—e.g., in the arterial and intestinal muscles. In the current number of the *Quarterly Journal of Experimental Physiology* Dr. Lena C. Adam records observations made on intestinal muscle only. The tissue used was a slip of longitudinal muscle from the lowest 2 inches of cat ileum, either fresh or on the second day, after being kept in the ice-chest; the animals were killed by chloroform or coal-gas. It was found that normal human serum contains a substance which causes a constant rise in tone when applied to plain muscle. The augmentor substance occurs in serum, citrated blood, citrated plasma, laked washed red cells, and fresh uncoagulated blood. A similar rise in tone was obtained with serum from cases of diabetes, scarlet fever, diphtheria (convalescent), pernicious anæmia, syphilis, and some cases of nephritis, malignant disease, and afebrile tuberculosis. An increased effect was obtained with serum from exophthalmic goitre, febrile tuberculosis, six out of eight cases of malignant disease, six out of nine cases of nephritis, and one case of influenza. A less marked rise of tone occurred with serum from one case of myxœdema, and was increased up to normal after thyroid feeding. It would be of great interest if, as the outcome of these observations, some factor could be found common to pathological states of which the sera has an effect greater than normal.

THE CASSEL HOSPITAL FOR FUNCTIONAL NERVOUS DISORDERS.

THE methods of treatment in use at the Cassel Hospital for Functional Nervous Disorders, Swaylands, Penshurst, are familiar to those acquainted with an excellent manual[1] published by its medical director last year. We know that Dr. T. A. Ross is not committed to any one method or to any one school; that different methods are used for different cases, but that in the great majority of cases psycho-analysis of any kind is avoided. The second annual report, whose issue we recorded last week, affords the first real opportunity of estimating the results obtainable by the "common-sense" means of treatment which he has advocated. They are most encouraging. Among the 113 patients in the largest of the classified groups—the psycho-neurotics—of 97 individuals who have sent replies from 6 to 20 months after their discharge, 75 are better and 29 state that they are absolutely well; 18 report that they are no better, and the remaining four are better but do not attribute their improvement to their treatment at the Cassel Hospital. The criterion of improvement is whether they are "fitter to face the world or not"—surely the most practical touchstone of all. The director in this report has nothing new to say on treatment, but he emphasises the fact that practically all psycho-neurotics are aware in some measure of the experiences in which their disease has had its origin, and adds: "History-taking in minute detail appears . . . to be infinitely more fruitful than the process which is usually called psycho-analysis." It is not denied that free association methods will sometimes discover these lost memories when history-taking has failed; but the year's work has tended to increase Dr. Ross's belief that the vast majority of the complexes so discovered are of no value in treatment. He is convinced further, from observation on several patients, that certain of the stereotyped complexes, such as the Œdipus complex, are not arrived at spontaneously by the patient; and a little care in questioning patients who have been analysed elsewhere has convinced him that many analysts impose Freud's views on their patients, and that there is not a great deal of true analysis being done. Another interesting point in the report is that patients with gross hysterical disability have been treated by "the method of direct persuasion after the history had been taken and the position explained." Dr. Ross deprecates the use of all physical aids, such as electricity. The number of his cases in 1922 was only seven, but six of them were completely cured and none had relapsed. Of the cases of psychosis, only 26 were considered suitable for treatment; 11 improved greatly while in the hospital and in nine the improvement has been maintained; of the two who relapsed one has again recovered and the other is again under treatment. The report states that at least six of these 11 patients would sooner or later have required treatment in a mental hospital if they had not been under treatment at Swaylands. The principle is consistently maintained at this hospital of refusing to express any conclusion as to whether a patient has or has not benefited from his stay there until at least six months after discharge; consequently the report deals with those patients who were treated in the hospital during the year 1922, from whom accounts have been received during 1923—182 individuals in all. There is ample evidence that the hospital is doing good work, and that it is fulfilling the purpose of its founder by aiding a type of patient whom it is almost impossible to improve in a general hospital.

[1] The Common Neuroses; their Treatment by Psychotherapy. By T. A. Ross, M.D., F.R.C.P. Edin. 1923. London: Edward Arnold. 12*s.* 6*d.*

A CANADIAN SYMPOSIUM ON CANCER.

THE last issue to reach us of the *Canadian Practitioner* (Vol. XLIX., No. 3) is a special "Cancer Number." There are in all 17 original articles by American, British, Canadian, and French authors, and the subjects range over the whole field of causation, prevention, and treatment of the disease. A general review of these articles is given in an editorial, and we think there will be wide endorsement of the commendation of the article entitled "The Influence of Radiation Therapy on the Study of Cancer," by Prof. James Ewing, of Cornell. This article will be read with pleasure and interest by many others than radiologists, for Prof. Ewing emphasises the fact that the radiation therapy of cancer has elicited many peculiarities in tumours demanding further study from biologists and physiologists. He briefly reviews the reaction phenomena which are a sequel to the irradiation of human tumours, and divides them into various categories. The first are the embryonal tumours which have a high degree of radio-sensibility; in these radiation may cause disappearance of the tumour without appreciable damage to the normal tissues of the host. The second are the cellular carcinomas, derived from adult cells which are not so radio-sensitive and, while the primary results of radio-therapy in these cases are often brilliant, few complete cures are obtained. The majority of malignant tumours are, however, not so radio-sensitive that the desired result can be brought about without some damage to the normal structures; in these a definite caustic action cannot be avoided. Occasionally the radiologist has to be content with slowing up or holding in check the malignant growth; Prof. Ewing is careful to point out, however, that this is, in many cases, a by no means negligible thing,

for such treatment may in time transform a malignant tumour into a quiescent and comparatively innocuous process. The whole number is deserving of study, and if we cannot completely subscribe to the view expressed by the editor that "the causes of cancer are to a large extent known," and still less to the view that "cancer can be prevented in a large proportion of cases, including cancer of the stomach"—we can well believe that time will achieve this unity of opinion.

CRIMINAL RESPONSIBILITY OF THE INSANE.

Mr. Donald Carswell's summary of proposed changes in the law of criminal responsibility of the insane, delivered and discussed at a meeting of the Section of Psychiatry of the Royal Society of Medicine, is given in another column. It forms a valuable commentary on Lord Darling's unsuccessful attempt (outlined under Parliamentary Intelligence, see p. 1084) to obtain legislative recognition for the defence of uncontrollable impulse. In asking the House of Lords to give a second reading to his Criminal Responsibility (Trials) Bill, Lord Darling modestly spoke of himself as the franc-tireur whose sniping brings on a pitched battle. Certainly the heavy artillery was brought to bear on the sniper. The weight of high judicial opinion proved hostile. Lords Sumner, Cave, Haldane, and Dunedin spoke against the proposal. The Lord Chief Justice stated that, out of 12 King's Bench judges whom he had consulted, 10 were opposed to it, one was in favour of it, and one was doubtful. In the circumstances Lord Darling could do nothing but withdraw his Bill. The main line of attack was the danger of the defence of uncontrollable impulse being set up in many serious charges, especially in crimes due to anger, vengeance, or sexual passion. There is evidently a judicial fear that the conduct of trials will be handed over to the medical profession, who will argue insanity from the nature of the offence. There is also a fear of weakening the citizen's power of resisting temptation. "Who is to decide," asked Mr. Justice Avory in charging the Leeds Grand Jury the other day, "whether an impulse was uncontrollable or merely not controlled? The law is there to teach people to control these impulses." Lord Darling's Bill was, in part, merely declaratory. He had some ground for contending that the defence of uncontrollable impulse is already recognised in English law. Sir James Stephen thought and taught so; Lord Denman said so in Oxford's case as long ago as 1840; the late Mr. Justice Bray declared so in Fryer's case in 1915; and Mr. Justice McCardie advised the jury so in the case of Ronald True. There are doubtless plenty of judicial decisions and opinions to the contrary, but it is a pity that the law does not make up its mind one way or the other. In favour of Lord Darling's statement of the principle one might further cite the established practice of the courts of Italy and of Germany and of South Africa and Queensland. Finally, there is the strong opinion of Lord Justice Atkin's committee of last year. That committee recommended that it should be recognised that an accused person "is irresponsible for his act when the act is committed under an impulse which the prisoner was by mental disease in substance deprived of any power to resist." Who were the rash and thoughtless committeemen who recommended what the recent speakers in the House of Lords denounced as such a difficult and dangerous doctrine? Two of them, Sir Edward Troup and Sir Ernley Blackwell, were the highest possible authorities on the administration of the criminal law as seen from the Home Office side. Four of them, Sir Edward Marshall-Hall, Sir Herbert Stephen, Sir Richard Muir, and Sir Archibald Bodkin, were men whose names guarantee that all possible points of view, whether of prosecution or defence, were well known and fully considered. Apart from the learned chairman, the three remaining members were all ex-law officers of the Crown, Sir Ernest Pollock (now Master of the Rolls), Sir Leslie Scott, and Sir Thomas Inskip, all experienced in conducting and advising upon important criminal trials. The committee was of exceptional legal and administrative strength. Is it likely that their recommendations would be too difficult to work or too dangerous to execute? Neither the report of Lord Atkin's committee nor the proposals in Lord Darling's Bill could be described as entirely satisfactory to the medical profession, but they were a step in the right direction.

Lawyers and judges would probably admit that their views are not scientific. Their attitude is one of confidence in administration and distrust of fine shades or progressive principles. "How," they ask, "are we to define insanity? Trust the wisdom of our judges, trust the common sense of our juries, trust our expert administrators at the Home Office, and all will be well." The anomalies of the law were well illustrated by the second clause of Lord Darling's Bill. As has been pointed out in these columns before,[1] the Trial of Lunatics Act of 1883 encourages a verdict of "Guilty but insane." Now to be guilty involves crime, and to commit a crime involves having what the law calls a *mens rea*, whereas to be insane involves the absence of a sense of right and wrong. The absurd verdict of "Guilty but insane" means little more than "Guilty but innocent." Lord Darling proposed to substitute "Not guilty because insane," but this proposal has fallen with the rest of the Bill.

ISOLATION OF LEPERS.

THE campaign recently initiated at the Mansion House for the care and treatment of leprosy throughout the British Commonwealth has naturally led to an increased interest in the existence of cases of leprosy at home. Emphasis has been laid on the method of segregation to limit the opportunities of infection, and so to combat the further spread of leprosy, and the question has very naturally been asked as to whether the lepers resident in this country should not again be segregated, as they were when the first leper-house was established at Nottingham in the year 625 A.D. Paris has recently woken to the possible danger of the spread of the disease in that city, to which at least 200 lepers have drifted from foreign countries, and Prof. Jeanselme has asked the Permanent Leprosy Commission to study anew the prophylactic measures desirable to prevent the spread of the disease in France. It is admitted that the method of infection in leprosy is practically unknown—hitherto it has proved impossible to infect animals—while the classical example of Father Damien, who wilfully and wittingly succumbed to the disease after 16 years' sojourn with lepers on one of the smaller Sandwich Islands, is still fresh in the popular imagination. In the United States of America a Bill was presented to Congress in 1905 with the aim of setting up a national leprosarium, although nothing came of it at the time. One of the Eastern States has its leper asylum in Boston Harbour. We think that anxiety in this country would be at once allayed by a cold study of fact. Although leprosy is not here a notifiable disease, yet successive Ministers of Health have given assurance in the House of Commons that the approximate number of cases of leprosy in this country is known, the total not reaching three figures. Since 1914 a number of cases have been isolated at St. Giles's Homes in Essex, which can accommodate six patients at a time; here local anxiety is giving place to a feeling of pride in possessing a benevolent instrument. In all these cases, wherever opportunity has offered of complete investigation, the source of infection could be definitely traced to previous sojourn outside the country. There is scarcely any evidence of leprosy having been acquired in Great Britain during a century or more; the last authentic case of endemic leprosy died in the Shetland Islands in 1798. The two or three cases in which home infection was presumed 40 or 50 years ago were instances of prolonged and intimate contact which is quite

[1] THE LANCET, 1923, i., 705.

excluded by present-day conditions. Hence, from the public health point of view, there would be no justification in segregating such cases as we have amongst us. The disease itself is sufficiently distressing without adding thereto the ferocious measures of the Middle Ages, when segregation led to a morbid fear of chance contacts. The Ministry of Health has recently had occasion to investigate an instance in which one of the nurses trained at St. Giles's Homes has undertaken, on her own initiative and expense, to furnish an asylum for some of these unfortunate persons, and to provide them with access to the most modern medical treatment. It is, we admit, uncongenial to many people to live within sight of their less fortunate comrades, whether they be morally, mentally, or physically afflicted. We can with good conscience assure them that there is no hygienic or public ground for anxiety or interference, though it would hardly be denied that at some places—for example, health resorts—the presence of a home for lepers might damage local interests. Where this is not so interference with a deed of mercy would be deplorable. It is only the very rich or the very heartless who can elude the reminder of such inequalities in our present social life.

NEW METHODS AT BUXTON.

THE formal reopening by the President of the Royal College of Physicians of London of a remodelled installation of hot baths at Buxton is an event of no little importance in British hydrology. It cannot be denied that, under new methods of investigation, the spas of all countries are being classified afresh, and true progress consists in the well-considered development of the special indications for each water. It is not always easy to define these *differentiæ*. Recent researches carried out by spa practitioners in the mineral waters hospitals, in which we are glad to see that Buxton is bearing an honourable part, have been recorded in the *Archives of Medical Hydrology*. They reveal unexpected actions and differences between springs. The Committee for the Study of Medical Hydrology in Great Britain has, during the past year, arranged lectures at the University of London and at various medical schools. These have been set up in the hope of familiarising medical men with the practice of hydrology in Britain and other countries, and also of instructing senior students in the principles upon which this practice is founded. It can hardly be doubted that even a few men, qualified by serious study, could do much to advance both the science and practice of hydrology in any country. Such opportunities for special training seem especially desirable, and even necessary, in England, if the British spas and the modes of treatment which they offer are to be looked upon, in Sir Humphry Rolleston's words, as a national asset. To utilise such resources in the proper manner is, we think, both a medical and public question, and ought no longer to be left to unassisted efforts of individuals, or even of enlightened public authorities.

THE COMING VOLUNTARY HOSPITALS CONFERENCE.

THE best method of completing the investigation into hospital accommodation will be the principal subject of discussion at the Conference of Local Voluntary Hospital Committees, which is to be held on June 18th. In order to focus the points for discussion at this Conference, the Voluntary Hospitals Commission has asked the local committees to obtain from each hospital in their area particulars of beds, length of stay, and waiting lists. The local committees are also asked to furnish reports on the following points:—

1. It is not an uncommon practice for patients awaiting hospital treatment to put down their names on the waiting lists of two or more hospitals. The difficulty, therefore, in computing the number of persons awaiting hospital treatment is the elimination of duplicate entries. The local committees should indicate whether there is any reason to suppose that such duplication exists, and if they are able to obtain exact figures after eliminating duplicate entries, these should be included in their reports.

2. The views of the committees on the extent of the need of further beds in terms of the several classes of beds specified in the questionnaire. (The Commission would particularly wish to know the views of the committees on the question of how far the need in their areas should be met by the provision of hospital beds or alternatively by the provision of more recovery or convalescent beds.)

3. The observations of the committees on the prospects of the hospitals succeeding in carrying out any scheme they may have in view for providing further beds and for maintaining them. In this connexion the Commission would be glad to know whether the committees have formed any opinion as to any alternative method of providing additional beds in their area.

4. What convalescent accommodation there is available for the inhabitants of the area, apart from beds controlled by the hospitals.

5. Whether there is any arrangement for utilising vacant Poor-law infirmary accommodation to supplement the voluntary hospital accommodation in their area.

6. The observations of the committee regarding any vacant beds there may be in the hospitals in their area, particularly as to how far vacant beds could be utilised —e.g., by a system of transfer of patients.

7. Whether the committees have conferred with the medical officers of health in their area, and what views the latter may have expressed on the question of hospital accommodation.

Local committees are also asked to make any suggestions as to how far the difficulties created by shortage of accommodation could be met by means of coöperation with areas adjoining their own.

RADIOGRAPHY OF THE PYLORUS.

THE interpretation of pyloric radiography tends to become more precise. Herrnheiser[1] in discussing X ray appearances of the pylorus and the pyloric antrum in the diagnosis of ulcers in these situations, draws attention to four morphological changes that occur in these conditions before any actual stenosis becomes manifest—viz., the pyloric or pre-pyloric niche, the contraction and reaction of the pyloric canal, and the formation of diverticula. The pyloric or pre-pyloric niche is situated usually on the lesser curvature, and varies in size up to about ½ cm. It is a sign of a simple ulcer, though malignancy cannot be absolutely excluded. If present, it is very strong evidence of an ulcer in the pyloric region. Contraction as opposed to actual defect, and analogous to hour-glass contraction of the body of the stomach, is of more frequent occurrence than the already mentioned sign, and is usually found along the greater curvature about ½–2 cm. from the pylorus. It remains unaltered in size, has clear-cut edges, and its depth may reach 1 cm. or more. In a new growth a somewhat similar appearance occurs, but the edges are diffuse and irregular. Retraction includes a flattening or elongation of the pyloric antrum or canal, and occurs practically always on the lesser curvature; whilst the greater curvature is full and rounded, the canal itself may be excentric or, if the flattening occurs all round, assumes a conical shape and is frequently twice its normal length. The condition may be associated with simple ulceration of the duodenum with or without pyloric adhesions, less frequently with new growth, rarely with a chronic appendicitis. Formation of diverticula occur typically on the greater curvature between the pyloric canal and a contraction area from simple ulceration, and is frequently present in the pre-stenotic stage of the pylorus. Actual pouching from ulceration rarely occurs in the pyloric canal, and is differentiated from a niche by its being along the anterior aspect of the organ. In a malignant ulcer the outline is irregular and indistinct, and there are other obvious changes in the contour of the viscus. The article gives an indication of the direction taken by clinical teaching of German radiologists.

[1] Med. Klinik, May 4th, 1924.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

LXXII.

THE TREATMENT OF BILHARZIA DISEASE.

THIS article deals with the cure of the individual affected by bilharzia disease. It is not possible to deal here with measures advocated for the eradication of the disease. However, the cure of a parasitic disease—if a genuine cure there be—is vastly the greatest part of "prevention," particularly in this case, for antimony not only kills the parasite but sterilises the seeds (ova) which spread the disease. According to the latest Egyptian Government (1923) statistics, it is estimated that of the 6,000,000 people who are infected with bilharzia in that country *over* 5,000,000 can be cured by antimony injections alone.

Bilharzia disease (schistosomiasis) is prevalent throughout Africa, some localities of China are heavily infected (Asiatic species), also one island of Japan, the Philippines, and Formosa; it is endemic in the West Indies and some parts of South America. The disease consists in the invasion of the liver by a fluke whose habitat is the portal vein. The parasites descend to the bladder and rectum by the portal tributaries to deposit ova, which thereby reach the exterior world. Intravenous injection is therefore the rational method of directly attacking the worm. Antimony tartrate is an effective cure[1] for all forms of human schistosomiasis (bilharzia). Both potass. ant. tartrate and sod. ant. tartrate are employed, soluble colourless salts, readily sterilised by boiling; they keep well in the tropics. Neither is too "toxic" for intravenous injection. Readily procurable, stable, and inexpensive, they are suitable for the mass treatment of a widespread disease. The sodium salt is less toxic, more soluble, and quite as efficient as the potassium salt.

Antimony tartrate has two distinct actions in schistosomiasis. It kills the ova deposited in the tissues by the worm and afterwards it kills the parasite. The former is the more important action, for the ova spread the disease. It is necessary to investigate the physical condition of the patient before commencing the injections. Bilharzia disease too far advanced, a feeble constitution from whatever cause, and serious cardiac and renal disease contra-indicate this treatment. A few individuals cannot tolerate antimony. These are only discovered by trial. In children and stout people veins are not easily accessible and some skill is needed to inject such cases. Children may be given antimony tartrate per rectum, but this method is of doubtful value; the large single doses which are given (gr. xv.–gr. xx.) make one suspect that little is absorbed. Emetine may be regarded as an alternative to antimony tartrate when the latter cannot be given. It is given by intravenous injections, 1½ gr. repeated 15 or 20 times in a month and a half or two months. It is inferior in efficiency to antimony tartrate and its use, in the necessary large doses, is liable to be followed by cardiac weakness and peripheral neuritis. In the tropics the fæces should be examined for the presence of other helminths previous to commencing injections. If found these should be dealt with first.

The Technique Used.

Two and a half hours after a light meal and two hours before the next, when the stomach is neither distended with food nor exhausted by hunger, is the best time for the injections, which are given on alternate days or three times a week. The commencing dose for an adult is ½ gr. (for children under 10 ¼ gr.). The dose is increased by ½ gr. at each injection till 2 gr. (or 2½ g.) has been reached. The full dose is given, unless contra-indicated, at each succeeding injection. Ampoules containing the various single doses used are made. They are comparatively expensive and are only suitable for private practice. In other cases dispensing errors are avoided by using tablets containing respectively 1 gr. and 10 gr. of antimony tartrate with the appropriate sodium chloride to make a physiological solution. They are made up conveniently and inexpensively by well-known chemists. These can be readily dissolved and boiled in a test-tube in water before the injection. Antimony tartrate can be boiled over and over again provided the water lost in boiling is replaced. The 10 gr. tablets dissolved in 40 c.cm. of distilled water (when procurable) make the solution: 2 c.cm. contain ½ gr., 10 c.cm. contain 2½ gr., and intermediate quantities in proportion. This standardisation is convenient; it is not too concentrated for the veins, and 10 c.cm. contain the maximum single dose. The 10 c.cm. record syringe is generally used.

Needles.—The needle is an important item, iridium platinum (23 mm. by 6 mm.) with short point are the best. For the negro skin, which necessitates a strong needle, stainless steel (24 mm. by 6 mm.) are used by the missionary doctors in Central Africa. Whatever the make, the needle should be moderately fine, sharp, and free from rust, and not more than 1 in. in length. All the apparatus used should be sterilised, the room suitable for an aseptic operation, the light good, and the patient lying down. In certain Egyptian hospitals the injections are made with the patient sitting, 300–400 injections being given in a morning; this fact indicates the infrequency of untoward incidents attending injections in Egypt. Acetone, ether, or alcohol is used to sterilise the skin. Iodine obscures the vein and is apt to make the site unfitted for subsequent injections. The veins at the bend of the elbow are the most convenient, but any prominent vein in the extremities, the external jugular in children, may be used. A tourniquet is not necessary with a clever assistant to compress the vein; team-work is the key to successful intravenous injections.

The needle *must* be introduced into the lumen of the vein. Cellulitis invariably follows if the solution is injected around the vein. A week or a fortnight in bed and much pain is the result; large fomentations are necessary and not too early incision. A regurgitation of blood into the syringe on withdrawal of the piston is the infallible signal. It is equally important that the needle shall not slip out of the vein during the operation. Beyond the pain experienced by the puncture intravenous injection is a painless operation. If pain is experienced it is wise to assume that the needle-point is not in the vein, but pain *may* be due to too rapid injection or to the solution being too concentrated; slower injection is then the remedy. The careful injector does no material damage to the vein wall provided he uses a sharp clean needle. The same vein may be used at the same spot for the 10 or 12 injections necessary for the course. After the operation the patient should remain lying down for half an hour, when, if he feels all right and his pulse is normal, he may walk home quietly, have a cup of tea, and rest for the remainder of the day; light food may be taken in two hours' time. A local blush is often seen during the injection, and the face and neck may become temporarily flushed. Before the injection is completed a painful, dry cough usually occurs, indicating that the antimony has reached the pulmonary circulation. A metallic taste, a dryness of the mouth, a feeling of constriction in the throat, a tightness of the chest, and later colicky pain in the abdomen are variable incidental phenomena which do not always occur. They are useful signals. If they are severe the dose should not be increased at the next injection; it may be advisable to reduce it. The occurrence of giddiness, headache, sickness, and diarrhœa, call for judgment in graduating the next dose.

[1] Prior to 1918 there was no known specific cure for bilharzia, though it is true that in 1916 emetine was being used by Greek doctors in Cairo. Urotropin, ext. of filix mas, boric acid, salol, hyoscyamus, and buchu were the drugs recommended; treatment was palliative and symptomatic, and bed and surgery gave the best results. Surgical complications, tumours and ulcers caused by the deposition of ova, sepsis, calculus, and new growth are still dealt with by appropriate surgery, but it is the practice now to eradicate the active bilharzia infection (parasite and ova) by a course of antimony injections before adopting surgical measures.

Rheumatic Pains.—A very constant symptom occurring during the night following the fourth or fifth injection is "rheumatic" pains in the joints or muscles, commonly the shoulders, caused by the antimony interfering with the metabolism of the liver and thereby allowing into the blood toxic bodies produced by imperfect physiological elaboration. The constant presence in the urine of oxalic acid crystals in excess is noteworthy in this connexion. These pains may be distressing though temporary, and if severe may require a reduction in the succeeding dose.

The first visible effect of the injections on the urine is an increased hæmaturia; later in uncomplicated cases the blood vanishes, the urine becomes normal in appearance, and the native patient, thinking himself cured, is apt not to return for completion of treatment. Punctually on the ninth day the ova in the urine, very much reduced in quantity, become granular. Gradually the live ova (those with outlines of embryonic structures) disappear. After 20 gr. have been given the urine is practically normal. The ova, appearing only at intervals, are granular and dead. Generally speaking, the necessary dose to ensure that both worms and ova are killed is 25–30 gr. for the *adult*.

Four methods for ascertaining whether sufficient antimony has been given have been recommended. None is of precise value: (1) Fairley's complement-fixation test; (2) the eosinophilia differential count; (3) Carlos Franças ovimetric method; (4) the microscopic appearance of ova in the urine. With regard to (1), it is not often possible to procure the necessary antigen, and the "reaction" is positive for some time after the cure. (2) is valueless because eosinophilia is not pathognomonic of bilharzia. (3) is based on the assumption that the female worm responds to the antimony by laying gradually smaller ova, and by measuring the ova the effect of the antimony on the worms can be determined. It also postulates that the antimony-sick-worm lays granular eggs. (4) is satisfactory within limits. The microscope, however, does not disclose the condition of the parent worm. Experience is thus at present the only sure guide in determining the necessary total dosage. Occasionally worms appear to resist even 30 gr. In such cases, suspend injections at 30 gr. and give a second course after an interval. In complicated cases the course of antimony should be given and the complications dealt with afterwards by appropriate medical and surgical measures.

Physiological Action and Tolerance. Idiosyncrasy.

Individuals vary greatly in toleration of antimony. "Coloured races" tolerate it well. Serious intolerance is not common in England, but it occurs more frequently than in Egypt or the Sudan. The initial cough, tightness of the chest, metallic taste in mouth, nausea, sickness, diarrhœa indicate care in graduating the dosage. Moderate intolerance may be overcome by careful slow gradation of dosage, but a patient who has shown marked symptoms of intolerance becomes intolerant to smaller doses. A serious form of "intolerance" appears as "shock," which may occur only after a few doses have been given. Hot-water bottles, blankets, rubbing the extremities are indicated, a diffusible stimulant—two teaspoonfuls of brandy in hot water should be given by the mouth, ½ c.cm. of a 1/1000 adrenalin solution diluted, and ½ c.cm. of a 20 per cent. extract of post-pituitary gland solution may be given intramuscularly. Digitalin, 1/50 gr., is useful to stimulate the heart's action. It is wise to be alert but not over-anxious on such occasions. When the condition of the patient has improved, a small cup of strong coffee, after being put to bed, is useful. Antimony tartrate used with caution and circumspection may then safely be employed for the eradication of bilharzia. But if this useful drug is employed empirically or in a commercial spirit it is bound to fall again into disrepute.

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Medicine and the Law.

HARNETT *v.* BOND AND ADAM: JUDGMENT OF THE COURT OF APPEAL.

CONSIDERED judgments in this case were delivered by Lords Justices Bankes, Warrington, and Scrutton on May 16th. A summary of the arguments submitted to their lordships will be found in THE LANCET of April 26th, pp. 870–872. The results of the judgments now delivered are that in the case of Dr. Bond the judgment of Mr. Justice Lush for £20,000 against him and Dr. Adam jointly, is set aside, but so far as it related to Dr. Bond, a new trial is ordered to be confined to the liability of Dr. Bond in respect of the alleged detention of the plaintiff at the offices of the Commissioners in Lunacy and of the period which ended when Dr. Adam had decided after the plaintiff's return to Malling Place that he should be detained there under the original reception order. As to this, Lord Justice Warrington said that there was no evidence on which the jury could arrive at the conclusion that Dr. Bond acted otherwise than in the belief that he was acting in Mr. Harnett's interest. This presumably is intended as an intimation that, according to his lordship's view of the evidence, the action of Dr. Bond was not more than technically an infringement of the plaintiff's liberty. In the case of Dr. Adam, verdict and the judgment of Mr. Justice Lush are set aside and judgment entered for this defendant with costs of the trial and of the appeal. Dr. Bond is to have the costs of his appeal, and with regard to costs to be granted at the new trial ordered a special order was made by the Court of Appeal as to the costs of the first trial, limiting the costs to be recovered under this heading by the plaintiff (if the plaintiff should succeed in the second trial) to such as would have been incurred if the claim in the first trial had been against Dr. Bond alone and in respect of the period above indicated for which alone Dr. Bond is to be deemed liable. This limitation of the costs of the first trial to be granted in the event of the result of the second trial being adverse to Dr. Bond was imposed by the Court of Appeal because, as stated by Lord Justice Bankes, the costs of the first trial had been "greatly increased by the form and extent of the plaintiff's claim against Dr. Bond."

Lord Justice Bankes, before summarising the facts of the case and in commenting upon its importance to the medical profession and to the public, pointed out that Mr. Justice Lush had decided that a person who in the view of a jury had acted without sufficient care, with the result that another person was detained under the Lunacy Laws as being of unsound mind, could be held liable and mulcted in damages, because a third person, whose duty it was to have the patient discharged if sane, did not do so, and this although the person, who continued to detain the patient, acted in good faith and in the honest discharge of what he conceived to be his duty. With regard to the detention by Dr. Bond, his lordship referred to that defendant and his secretary as agreed that when Mr. Harnett called at the offices of the Commissioners he was manifestly unfit to take care of himself or to be allowed out any longer on probation. After describing the manner in which evidence covering the whole of the subsequent period of detention had been introduced at the trial, Lord Justice Bankes said that the long-drawn-out story of the plaintiff's detention had enabled counsel to appeal to the sympathies of the jury, and to produce an atmosphere in which the sufferings of the plaintiff monopolised attention.

As to the condition of the plaintiff's mind on Dec. 14th, 1912, the jury had found him to have been sane, but no question had been put to them as to his sanity with regard to the subsequent period from December, 1912, to October, 1921, and it was difficult to see how, without any finding in the plaintiff's favour as to that period, damages could have been awarded him in respect of it. However, the jury must have considered him sane during that period. There had been no argument on behalf of the defen-

dants before the Court of Appeal to the effect that the verdict as to the plaintiff's sanity on Dec. 14th, 1912, was against the weight of evidence, so no opinion would be expressed as to that.

Turning to the main question affecting Dr. Bond, whether his liability, if any, for the plaintiff's detention extended to the whole period from the time when the plaintiff was taken back to Malling Place up to his escape from a different institution in 1921, his lordship pointed out that this was a vital point. He read extracts from the summing up and judgment of Mr. Justice Lush, who had refused to accept the argument that any subsequent proceeding in connexion with Mr. Harnett's detention had constituted a *novus actus interveniens* breaking the chain of causation. Mr. Justice Lush had referred to the certification of Mr. Harnett in November, 1913, as "mere machinery" for avoiding the necessity of a new reception order; and had drawn a distinction between an act of omission (omitting to recognise the plaintiff's sanity) and an act of commission, the latter alone being capable of being interpreted as *novus actus interveniens*. Lord Justice Bankes declined to draw any such distinction in the plaintiff's case, or to find that the proceedings necessitated by the Lunacy Acts were not acts of commission. He could not look on the serious act of certification as mere machinery and found the chain of causation broken in many places. He could not hold that the jury could take into consideration the whole period of the plaintiff's detention in assessing damages. If his lordship's view as to this was right the verdict and judgment against the two defendants as joint tort-feasors must be set aside.

Proceeding further to discuss the question of the damages awarded, Lord Justice Bankes was of opinion that they were based upon misapprehension of the defendants' liability and that the attempt made at the trial to apportion them must consequently fail. He proceeded to refer to the Lunacy Acts of 1890 and 1891 and to the scheme of legislation embodied in them. Lord Lindley in Reg'na *v.* Whitfeld (15 Q.B.D., 122, at p. 150) had described the powers granted by the Lunatic Asylum Acts of 1853 to justices of the peace and medical men as due to the theory that they could be trusted; this was equally true of the later Acts. The reception order justified Dr. Adam in receiving and detaining the plaintiff whom he might have recaptured under it if he had escaped. His lordship described the processes by which a reception order is continued in force under Section 7 of the Act of 1891 by successive special medical reports to be made by the medical officer of the institution in which the patient is detained. He quoted Lord Denman (In re Shuttleworth, 9 Q.B., 657, p. 658) as saying that double protection had to be afforded against improper confinement on the one hand, and on the other against danger from a lunatic being unrestrained.

With regard to the question whether the liability of Dr. Bond should extend beyond the sending for the patient at his request by Dr. Adam, his lordship looked upon the Lunacy Acts as conferring on the medical man in charge of a patient a daily and hourly duty of satisfying himself of the patient's need to be confined; and in his opinion every decision come to by a medical man, by a Commissioner, by a visitor, or a member of a visiting committee of itself amounted to a *novus actus interveniens*. With regard to the view that these decisions in Mr. Harnett's case had merely been the omission to detect his sanity, his lordship suggested the comparison of a wrong diagnosis of a case of scarlet fever as measles. That would be to make a wrong diagnosis, and would rightly be so described, but according to the point of view adopted it might equally be said to be the omission to make a right diagnosis. In any case the defendant, Dr. Bond, could not be held responsible for the opinions formed by Dr. Adam after the plaintiff had passed back into his hands.

With regard to Dr. Adam, his lordship carefully examined the effect of the reception order and of the probation order granting leave of absence, and declined to treat the latter as giving complete liberty for a full period of 28 days. It was an intimation by the medical officer, sanctioned by two visitors and consented to by the person who applied for the reception order, that the powers under the order would cease to be exercised by the medical officer unless it became necessary that they should be. He could not interpret the words "take back" in the probation order as merely equal to "receive back." He was further of opinion that Dr. Adam was protected by Section 330 of the Act of 1890 if he had acted with reasonable care. He could see no evidence of want of care on the part of Dr. Adam, and the fact that he had not personally gone to fetch the plaintiff back was an example of a comparatively unimportant point to which undue weight had been assigned at the trial. The judgment against Dr. Adam must be set aside and judgment entered for him with costs.

The case of Dr. Bond was on a different footing. Liability on his part had been admitted, but the damages had been wrongly assessed. Judgment was therefore given for a new trial in the case of Dr. Bond, the judgment given by Mr. Justice Lush being set aside, and the scope of the new trial granted being laid down as stated above.

Lord Justice Warrington, in giving judgment to the same effect, said that as liability for the plaintiff's detention had been admitted on behalf of Dr. Bond, so far as he was concerned the question was whether the damages were excessive. Dr. Adam in taking the plaintiff back had acted on the authority of the statute, the reception order, and the probation order, and was not liable to proceedings if he had acted in good faith. The assessment of the damages was wrong. The detention of the plaintiff after he left Malling Place was directly caused by the action of the various medical officers, Commissioners, and visitors who had the necessary power to release or to detain him according to his mental condition. Dr. Bond neither controlled these persons nor Dr. Adam, all of whom could have released the plaintiff. As to the £5000 damages allocated in respect of the detention at the Commissioners' offices, the sum, in his opinion, was excessive. Some of the jury's answers amounted to a serious imputation on Dr. Bond, and there was no evidence to justify them.

Lord Justice Scrutton spoke of the danger of confusing the issues raised at the trial which was not a Royal Commission to inquire into the working of the Lunacy Laws as applied to Mr. Harnett's case. If it had been so it might be suggested that the judicial inquiry preceding the reception order might be more precise in its procedure if the alleged insane person were informed of the charges against him and given the opportunity to answer them. His lordship referred in detail to some of the acts alleged against Mr. Harnett, and pointed out that for eight or nine years visitors and medical men independent of Dr. Bond had examined him. The liability of each defendant ceased when the detention was continued by the legal act of a person appointed to continue or, if he thought proper, to stop it. Dr. Bond had no power to detain the plaintiff and acted illegally in doing so, but his responsibility ended when that of Dr. Adam began, and as to Dr. Adam there was no evidence that he had not acted with reasonable care. In the case of Mr. Harnett the judge and jury no doubt desired to compensate him for wrongs they believed him to have suffered, but a careful examination of the legal position was called for, and the Court must not be turned aside by appeals suggesting that the Lunacy Acts might in a particular case bear hardly upon an individual or upon the community.

The order made by the Court of Appeal as to costs is referred to above. It was further ordered that the sum of £5000, ordered by Mr. Justice Lush to be paid to Mr. Harnett, must be repaid, as a condition of the order for a new trial. An application for costs from Dr. Adam on the higher scale was not acceded to. An intimation was given that the question of an appeal on behalf of Mr. Harnett to the House of Lords would have to be considered by his advisers.

Special Articles.

THE SURGICAL TREATMENT OF CANCER OF THE BREAST.

THIRD MEMORANDUM OF DEPARTMENTAL COMMITTEE OF MINISTRY OF HEALTH.

THE third[1] of the series of reviews summarising the position of modern knowledge and practice in regard to different aspects of cancer, now being issued by the Departmental Committee on Cancer of the Ministry of Health, relates to cancer of the breast and the results of surgical operation in connexion with this condition. One of the first undertakings of the Committee was to arrange an exhaustive study of existing surgical literature, home and foreign, which bears on this subject. This considerable task, which has involved the analysis of records of upwards of 20,000 cases, has been undertaken for the Committee by Dr. Janet Lane-Claypon. The presentment of this analysis requires some little time, but meanwhile some important conclusions to be deduced from it already stand out clearly, and have confirmed the Committee in their belief that public advantage will be gained by the issue of the present memorandum.

Facts which should be Recognised.

The memorandum reviews the general position at which surgery has arrived in the case of this form of cancer, and states certain facts which the public should recognise if operative treatment is to yield the success which in favourable circumstances and under modern conditions it is capable of yielding.

The first section deals with immediate operation mortality past and present, and with the duration of convalescence. It is stated that deaths directly attributable to the operation, if performed by skilful surgeons and in well-equipped institutions, have been reduced in breast operations to a fraction of 1 per cent. At the present time even more extensive operations heal, as a rule, without any suppuration and the patient is out of bed in about a fortnight.

In the second section on the natural course of cancer of the breast, the well-known symptoms—age incidence and course of the disease—are set out. There is reason to believe that the upper and outer quarter is the commonest situation in which cancer appears, while the nipple is the rarest, the other portions occupying intermediate positions in this respect. The matter is important because the severity of the disease bears a relation to the portion of the breast affected. The fact that in its early stages cancer is usually unattended by pain is again emphasised.

For many reasons the natural duration of cancer of the breast is difficult to state with precision. Thus (1) the onset frequently cannot be fixed with any degree of accuracy; (2) amongst cases of cancer, even in women of the same age and of the same habit of body, some run an acute, others a chronic, course; and (3) the age at which the patient becomes affected appears to exert an important influence upon the natural course of the disease: cancer takes, on the whole, a more rapid course in the young person than in the old. If cancer of the breast supervenes during pregnancy or lactation the course of the disease may be abnormally rapid. While subject to these variations, the average natural duration of a case of cancer of the breast appears to be a little over three years.

The close relation between cancer and antecedent chronic inflammatory disease of the breast is discussed in the third section; this relation, coupled with the fact that a non-malignant tumour of the breast may remain so for a long period of years and ultimately pass into undoubted cancer, must have a bearing on the advisability or otherwise of operation in diseased conditions of the breast other than cancer.

On treatment of cancer of the breast, which is the subject next dealt with, it is stated as being beyond question that, at the present time, early surgical operation affords the one chance for a patient suffering from cancer of the breast. Cases of cancer treated only with internal medicines, or external applications, or by dietetic methods are not being effectually treated. This does not mean that such agents as radium and X-rays cannot be usefully employed as aids to surgery, or in cases in which surgical operation is impossible. Unfortunately, with improvement in surgical technique there has been no corresponding increase in the proportion of cases which reach the surgeon at a stage of the disease when such treatment offers the greatest advantage, and this fact has to be remembered in assessing the results of surgical treatment. As to varieties of operation, it is indubitable that the better results obtained at the present time by operation in cancer of the breast mainly depend upon the completeness with which the outlying portions of the cancer are removed. It is satisfactory to note that the modern "complete" operation does not add in any significant degree to the risk of the operation itself, nor to subsequent disability, so far as the patient is concerned. A modern extension of the operation lies in the addition of such advantages as are afforded by radium and X rays, to the "complete operation." The object of this radiation treatment subsequent to operation is to deal with microscopical foci of living cancer cells that may lie beyond the limits of the operation, so as to prevent their development.

Results of Operation.

The most important point of all, from the patient's aspect, is the measure of the success of surgical treatment, and this is very difficult to assess. The *average* duration of life in patients whose disease has followed a natural course is estimated at little more than three years. No precisely comparable figure for patients who have been operated upon can be given owing to the difficulty of keeping in touch with them for perhaps 10, 15, or more years after operation. A majority of surgeons have been obliged to content themselves with reporting the percentages of their patients who have survived three years from the date of operation.

The aggregate results, based on the experience of many surgeons in different countries, are as follows:—When the old and now generally superseded incomplete operation was performed, about 25 per cent. of the patients were known to be alive at the end of three years after operation. When the more complete operation of modern times was performed, twice as many, some 50 per cent., survived three years, and 33 per cent. survived five years after operation. These statistics, however, relate to patients who at the time of operation were in various stages of the disease, some in a condition such that, although the surgeon could be reasonably sure that operation would afford relief, and *might* eradicate the disease altogether, he could have little confidence that the disease would not recur. On the other hand, statistics exist of the results when the disease at the time the patient came to the surgeon appeared to be in an early stage and limited to the breast only. In this early condition it is *certain* that 60 per cent., and highly probable that 75 per cent., of the patients were alive and well three years after operation. Indeed, some experienced surgeons have thought that the percentage of cured patients might, in these circumstances, be stated to reach 75 per cent.

Prolongation of Life.

Upon the basis of all these statistics it is possible to reach an average figure of the duration of life after operation which can be set against the average of some three and a half years in the unoperated cases, but this can only be done by means of assumptions, to state which would require a technical and detailed account unsuited to this memorandum. It may, however, be stated that, even under the unsatisfactory conditions imposed by the late stage at which many

[1] Cancer.—iii. Circular 496. Ministry of Health, 1924. H.M. Stationery Office. 1*d*. The two preceding pamphlets were dealt with in THE LANCET, 1923, ii., 479; and 1924, i., 770.

cases come under surgical observation, which gravely lowers the average success recorded in the massed statistics, the mean duration of life is prolonged several years. In the special circumstances of operation at the most favourable—that is, the earliest—moment after recognition of a lump in the breast, there is an average prolongation of life amounting to *many* years. The Committee have advisedly refrained from adopting the word "cure" and have only spoken of the prolongation of life. It is, however, certain that cure, in the widest popular sense of the word, has frequently been effected by *early* operation—i.e., that patients have lived 10, 15, 20, or more years and died ultimately of some other disease. The surgeon cannot promise this, however early the operation, but he is entitled to assert that in a great majority of cases life will be considerably prolonged and in a still greater majority rendered more acceptable, freer from pain, and more capable of active enjoyment. On the other hand, the after-history of patients not operated upon, or operated upon when the disease has spread beyond its first point of attack, can be foretold with equal certainty and is a sad one: it will not often exceed three or four years. The teaching of surgical statistics is, then, that the results of early and complete operation justify not a certain, but a highly favourable, prognosis.

A Demand for Local Inquiries.

The considerations set out in the memorandum suggest that local inquiries may be useful to ascertain the extent to which, in a given area, cancer of the breast is now being allowed to continue to a fatal termination without appropriate surgical treatment. It is suggested that local authorities, in conjunction with local representative bodies of the medical profession in suitable areas, might periodically undertake a review of such questions as this as well as of the facilities given locally (1) for clinical consultations and for pathological examinations, and (2) for the treatment, especially operative treatment, of cases of cancer.

IMPERIAL SOCIAL HYGIENE CONGRESS AT WEMBLEY, MAY 12TH–16TH.

(*Concluded from p. 1024.*)

THE proceedings of this congress, the first day of which was reported in our columns last week, demonstrated the many-sidedness of the problem and the existence of a large body of men and women, lay and medical, keenly interested in its solution. Important papers were read on a number of more or less closely related topics. It may be useful to summarise here some of the points in the control of venereal diseases on which there appear to be general agreement and also those which give rise to controversy.

Education.

Agreement was general that much more needs to be done to educate the public as to the serious ravages of these diseases, that cure is a means of prevention, that early treatment is essential to cure, and that the attainment of a higher moral standard and the avoidance of promiscuous sexual intercourse should be put in the forefront. Education of the young and adolescents in sex hygiene, it was pointed out, should be founded on the teaching of self-control, beginning in infancy, and on education in biology and good citizenship from the elementary school period onwards. Sir Frederick Mott's interesting paper showed how necessary it is for elders to understand and allow for the varying effects of the critical period of puberty on the adolescent of either sex. In some quarters it was contended that health authorities are not sufficiently interested, owing to the fact that they have been, as it were, "contracted out" of the schemes, and have not that direct interest in the suppression of this section of infectious diseases, which is, perhaps, more important than any other to the health of the community. The old idea that venereal diseases are a just punishment for immorality is evidently not dead, in spite of the well-known fact that a large proportion of the sufferers acquire the disease innocently, and it was stated that some institutions still regard these patients as pariahs. Evidently the truth that, in these diseases particularly, adequate treatment is a measure of prevention of first-class importance, must be insisted upon day in and day out. The obvious corollary is that, in order to get the sick treated, every facility and a sympathetic reception must be provided at all clinics and institutions engaged in the work.

Efficiency of the V.D. Clinics.

It was made evident by the papers and discussion on May 14th that the clinics at present fail to secure the attendance of a large proportion of those who need treatment, and that of those who do attend a considerable proportion default. Sir George Newman suggested that the amount of default is exaggerated by the high standard of cure adopted, and that in many cases those not returned as cured have been, no doubt, rendered permanently non-infective or greatly relieved. On the other hand, Mr. David Lees, of Edinburgh, and Colonel L. W. Harrison (Ministry of Health) were of opinion that the clinics with the highest standard of cure showed the smallest proportion of defaulters. Mr. Lees considered that one of the main factors in reducing the failure to continue treatment at the Edinburgh clinic from 40 per cent. four years ago to the present low figure of 14½ per cent. had been the discouragement of self-treatment. Patients who are instructed to treat themselves are apt to cease attending. All patients at the Edinburgh clinic are required to attend weekly or fortnightly, and treatment is, as far as possible, administered at the clinic. Colonel Harrison emphasised the great advantage of clinics open all day (say from 8 A.M. till 10 P.M.) over clinics open only at stated hours, and compared the results of one all-and-every-day clinic with a percentage of "ceased attendance" of 12·3 for syphilis and 14·6 for gonorrhœa, with the results of a clinic open at restricted hours with a percentage of "ceased attendance" of 33·2 for syphilis and 32·4 for gonorrhœa. Colonel Harrison also insisted upon the need for setting aside time for the systematic and thorough examination of the cases of chronic gonorrhœa. If this were not done, and the treatment of such cases became merely routine, the patients would lose hope and cease to attend. There was general agreement that the tact and sympathy of the medical officer was a most powerful factor in reducing default to a minimum. Dr. F. N. Kay Menzies would like to have the 28 London centres reduced in number to six or eight thoroughly efficient all-day clinics. It is quite clear that a large number of the clinics do not approach the high standard laid down by Colonel Harrison and Dr. Lees, and that apart from the question of patients ceasing to attend before cure is completed, a large number of cases do not come up for treatment at all. More cases of gonorrhœa attend than formerly, but a very large proportion of female gonorrhœa goes untreated. Very little syphilis of parturient women is treated. Hostels are needed to ensure the successful treatment of single girls who are in domestic service or other employment. Special sessions are needed for married women and children, although the all-day clinic minimises the objections to the herding together of all types of patients in the common waiting-room. The looking-up of contacts and infecting cases is a difficult matter. Colonel Harrison pointed out how much could be done in this respect by tactful almoners, and would like to see an almoner attached to each clinic. Miss Frances Brown (supervisor of the Venereal Disease Nursing Department of Public Health, Toronto, Canada) showed that in Canada each V.D. clinic receiving a Government grant is required to employ a public health nurse, and that on this nurse devolve the duties of (1) securing the regular attendance of patients; (2) securing the examination of other members of the family; and (3) instructing the family as to home treatment. It was evident from the papers and discussion that little

has as yet been done in this country in the way of searching out contacts and securing their treatment, and that the discovery of cases of congenital syphilis, vulvo-vaginitis, and ophthalmia neonatorum rarely leads up to the treatment of the parents, infective cases, or contacts.

The Place of the Local Authority.

Scotland has evidently made up its mind that some scheme of notification with a view to securing the continuous treatment of sufferers is necessary. Even Mr. Lees, in whose clinic default is now so small, thinks some system of control is necessary to enable us to deal with patients who are irresponsive to the most skilled persuasive powers, with suspected and known sources of infection, and with known sources and cases of hereditary disease. He favours a system of confidential notification and compulsory continuous treatment, such as that in force in Canada. Dr. A. K. Chalmers thought schemes should be carried out directly by the local authorities, and said there was a growing feeling that we were not getting the best results from the large expenditure involved. Dr. W. A. Daley (Blackburn) favoured an experiment in notification and the treatment of women and children at maternity and child welfare centres. Dr. R. F. M. Picken (Cardiff) said it was difficult to get health committees really interested as long as they were contracted out of the schemes. Judge Harvey (convener of the Edinburgh Health Committee) said that 27 recalcitrant authorities in Scotland which had not yet adopted schemes should be pressed, and mentioned that no proper treatment had yet been adopted in prisons in Scotland. Sir Henry Keith mentioned that the Convention of Scottish Burghs has passed a resolution in favour of notification. Many speakers with experience of treatment drew attention to one great advantage from having the V.D. clinics at general hospitals—namely, that the syphilologist thus readily secures the consultative assistance of the ophthalmologist, dermatologist, neurologist, &c. Colonel Harrison thought that at the present time the improvement of facilities at the clinics was much more pressing than the consideration of compulsory notification or treatment. Dr. Letitia Fairfield produced evidence that more of the gonorrhœa cases were seeking treatment at the clinics. The work of the lady almoner was invaluable. She was able to follow up clues and get contacts, not by asking questions but by listening, in her capacity as booking clerk, to the stories of patients who appealed for her help. In London they were opposed to notification. Improved treatment was wanted for all gynæcological ailments and the married working class woman had too low a standard of health.

The Position of the General Practitioner.

The treatment of both gonorrhœa and syphilis has become so highly technical that it is obvious that general practitioners who desire to carry out the treatment will have to specially qualify themselves. If they have done so, the treatment of patients will make such demands on their time that it is difficult to see how they can receive adequate financial compensation from the patients themselves. Where a V.D. centre, as in the case of Edinburgh, serves a large area, Mr. Lees favoured the establishment of local subcentres under the direction of the principal centre, where daily and intermediate treatment can be carried out. At such subcentres panels of general practitioners could possibly work, with the advantage of being able to consult with the specialist at the centre. The family doctor's coöperation must be obtained. Under present circumstances he should be invaluable in securing the treatment of contacts and infecting cases in the family. The need for clerical assistance being provided at each clinic was emphasised during the discussions, in order that each general practitioner may receive full particulars with regard to each patient sent by him to the clinic. The possibilities of "team" work were mentioned by which one general practitioner, specially trained, could undertake V.D. treatment for his neighbours.

Imperial Questions.

The last day of the Congress was devoted to the discussion of problems in the prevention and treatment of V.D. in the various parts of the Empire. Mr. L. S. Amery, M.P., president of the section, said the problems in the Dominions were not essentially different from those in this country, but that the interchange of ideas and experiences would add to the common stock of knowledge and efficiency. In the discussion the work which is being carried out in Canada, Australia, India, South, East, and West Africa, and the West Indies came under review and the Congress concluded with a discussion on propaganda among illiterate races.

To those who feel discouraged by the smallness of the results when compared with the immensity of the problem we commend the cheery dictum of Dr. Margaret Rorke: "We have made great strides in the last seven years; in another ten we shall work wonders."

THE NEW NATURAL BATHS AT BUXTON.

The Opening Ceremony.

ON the afternoon of Saturday, May 17th, the new natural baths at Buxton were formally opened by Sir Humphry Rolleston. The ceremony was performed in fine weather before a large assembly of townsfolk and visitors, and, as guests of the corporation, there were gathered representatives of the medical profession from all parts of the country. The platform party included the Duke of Devonshire, Lord Hartington, M.P., the mayors of several towns, and local civic dignitaries. The Mayor of Buxton, Mr. G. Smithurst, in welcoming Sir Humphry Rolleston, said they had always regarded their ownership of the springs in Buxton as a national trust as well as a local asset. Dr. T. H. Cooper, Chairman of the Baths Committee, together with the architect and the contractor of the new structure, were presented to Sir Humphry Rolleston, who then performed the opening rite. He said:—

"The very few words that are necessary to declare open the new natural mineral-water baths must begin with what is uppermost in our minds—namely, sincere congratulations to the corporation on their wisdom in initiating and so satisfactorily carrying through this great undertaking. This progressive policy, though no doubt in these times not without its attendant anxieties, is the true road to success, and, further, the corporation has made success the more certain by asking the medical profession for their advice, and by taking the somewhat rare and original course of following it. Though with great natural advantages in its healthy and beautiful surroundings, Buxton has done right in making every endeavour to utilise the outstanding properties of its waters by the most complete installation of balneological appliances. Further, the corporation is to be congratulated on realising the importance of continually breaking fresh ground—of making new knowledge, and of putting this into practice by subsidising the research laboratories at the Devonshire Hospital. From a medical point of view this is of paramount importance, for there is still a great deal to learn about the diseases which patients come to Buxton to have cured on the one hand, and about the method of action of the waters on these diseases on the other hand.

"The new mineral baths, which I now have the honour to declare open, therefore start on their career with the best auguries—namely, a scientific in place of the old empirical basis of treatment. Thus they deserve, as we may confidently believe they will achieve, high success."

Inspection of the Baths.

A vote of thanks to Sir Humphry Rolleston having been proposed by the Duke of Devonshire, a tour of

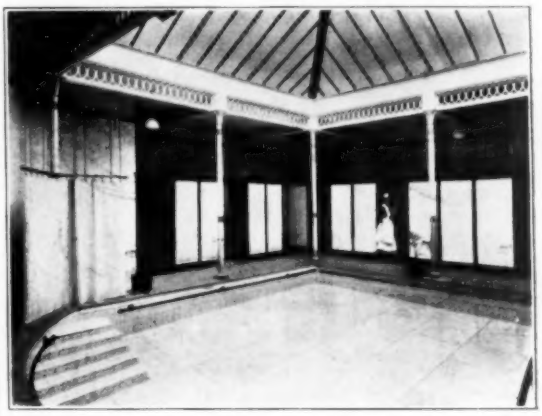
inspection of the baths was then made. These baths are termed "natural" because in the case of swimming and immersion baths the water is continually flowing through them and the patient is thus immersed in a stream of running water as in the more primitive forms, where the patients bathe in a pool or lake at the source of the spring. The new building is contiguous to the south end of the famous crescent and is designed in harmony with its surroundings. A lounge panelled in oak leads to the swimming pools, which are three in number, two for men and one for ladies. The largest is 30 ft. long by 18 ft. wide, and is situated over one of the principal springs, the water from which enters the bath through perforated marble slabs which are placed on the surface of the rock. The blue colour of the water is shown up by the white marble and tiling, and large bubbles of gas rise continuously to the surface. The ladies' bathing pool is similarly planned, with perhaps special attention to those refinements which add not a little to the success of the cure.

The springs of Buxton are of two kinds: the radio-active thermal water, upon which the fame of Buxton throughout has been based, and the chalybeate spring. The thermal water emerges from the limestone rock, which forms one of the geological features of the district, by nine springs which are undoubtedly outlets from the same subterranean reservoir, as they are identical in temperature and composition and rise within a radius of a few yards. From one of these springs alone about 2,000,000 litres flow daily at a uniform temperature of 82° F. The gas with which the water is impregnated consists chiefly of nitrogen and CO_2, but contains argon, helium, neon, and other elements. The temperature of the swimming bath, at 82° F., is thus pleasant and stimulating. In addition to the swimming pools a new bath has been devised and installed in which the water is warmed to 90° F. by means of a special calorifier while still running continuously through the bath, thus retaining its natural character of running water and losing none of its gases or radio-activity. A further addition to this bath, which is also in use in the hot baths, is an apparatus by which compressed air can be forced through the water setting up a strong effervescence. It is anticipated that this new method will prove a most valuable addition to the modes of treatment already in use. Among the chief improvements and additions which have been made since the principle of heating water was adopted have been the undercurrent douche and the Buxton system of douche massage.

The Devonshire Hospital.

Following the inspection of the baths and St. Ann's Well, one of the principal springs, where the waters may be drunk in comfort, tea was provided for the guests in the Buxton gardens. This was followed by a visit to the Devonshire Hospital, which claims to be the largest hospital for rheumatic disease in the world, with 300 beds and an out-patient department. It is in the laboratory of the Devonshire Hospital that research is being carried out as to the properties and effects of the Buxton waters both in their external and in their internal application.

FIG. 2.



Ladies' Swimming Bath.

The Banquet.

In the evening a banquet was given by the corporation at the Palace Hotel. Over 130 guests were present and of these about 100 were medical men. Responding to the toast of his health, Sir Humphry Rolleston said:—

"Among health resorts a distinction should perhaps be more definitely drawn between: (1) Those benefiting the visitors in a general manner on account of the climatic conditions, pure air and water, altitude, atmospheric temperature and composition, winds, sun, and other factors; and (2) spas which in addition exert a specific action on the visitors in virtue of the effects of the external and internal use

FIG. 1.

The New Baths, Buxton. [*Photos by Hunters, Buxton.*

of waters, and of the utilisation of active principles contained in the water.

"1. That a change of environment exerts an influence is a commonplace; thus improvement in health may follow a visit either to a health resort without any special baths or waters, or to a spa where no real use is made of the special advantages that it possesses. The study of the effects due to such a change comes under the heading of medical climatology, but that climatology and hydrology should be closely connected is too obvious to require argument. A regulated life, supervised diet and exercise, and freedom from worry are no doubt more easily ensured at a health resort than at home, and in some instances the good effects of a visit to a health resort are thus explained; in the past spas were often used as pleasant places for an irresponsible holiday after a busy season or life in town without any serious attention to the special requirements of the individual visitor, or to the peculiar properties of the spa treatment. Where and when this spirit exists and as long as the tide of fashion is sufficient to keep the resort full, there is a danger that the special properties of the waters and the best methods of applying them will be neglected, for the demand controls the supply, and scientific investigation receives no encouragement and less stimulus. The bathing establishments, if there are any, are not kept up to date, and their value and use even as a window-dressing attraction will dwindle progressively. Buxton is in no way open to any reproach on these scores, and while far from relying on them alone has great natural advantages from its altitude (1000 ft.) and beautiful surroundings; it has much historical interest, sharing with Bath the imprimatur of Roman patronage. These are most important accessories, for it would be a grave mistake to neglect the psychological factor of inspiring a helpful *joie de vivre* among those who come for a cure, and thus to obviate the boredom that a search for health and relief from pain may bring in its train. Cheerful and attractive surroundings and pleasing distractions have their proper place in a cure, and it must be admitted that, in the past at least, British health resorts have lagged behind many on the continent. But this handicap is rapidly being eliminated.

"2. The second category of health resorts is that of the spas with their medicinal waters and careful medical supervision—two factors inseparable for success. Spas, such as Buxton, Bath, and Harrogate, are, as Dr. Fortescue Fox, our leader in hydrology, has insisted, a national asset. But their value must depend on skilled control of the patients, and circumstances are not always and everywhere favourable to the fulfilment of this necessary condition. Directions as to diet and treatment may be given but not faithfully followed, and it is not surprising that such 'a cure' brings disappointment. An obvious remedy against dietetic lapses is to remove temptation, so that patients undergoing a cure should find it impossible at their hotels to go outside their prescribed dietary, both as regards quality and perhaps even the more difficult question of quantity. The British spas have their special characters, and the tonic ones, such as Buxton, need fear no rivals in their natural advantages; but to render these fully available an up-to-date and complete installation, such as is being opened here to-day, is necessary. In addition to the baths and other appliances for hydrological treatment and to all that is included under physiotherapy, such as massage, exercises, and electricity, an important department is that for the diagnosis and controlled treatment of disease; the poor and those of limited means can be cared for in the mineral-water hospitals, such as the Devonshire Hospital here, with its 300 beds and clinical laboratories; but for the well-to-do, as is perhaps in keeping with our characteristics of national individualism and freedom, there are only hotels, pensions, and lodgings with practically complete liberty of action and varying degrees of luxury. Should not these unconsciously unfortunates have equal advantages with the poorer sufferers and have the opportunity of going into hostels or nursing homes with all the advantages of an up-to-date clinic?

The Importance of Research Work.

"Clinical and biochemical laboratories, such as are attached to the Devonshire Hospital, are essential not only for the accurate diagnosis of the diseases of individual patients but for the maintenance and advance of the science of hydrology and physiotherapy. These methods of treatment, which are so closely allied to the *vis medicatrix naturæ*, have in the course of their long existence passed from an early semi-religious and superstitious period, through a long empirical phase, into the scientific era which began about half a century ago. A good deal of investigation has been started especially since, and because of the stimulus of the war, but the science of hydrology is still in an early stage of development. Of the physiological effects of water internally and externally there is an enormous amount to be learnt, and the profession naturally looks to its members with the opportunities at their hand to take a leading share in the advance of hydrology. This has been fully recognised by British leaders in hydrology, and their exertions are shown in the young and energetic *Archives of Medical Hydrology*. The future of scientific medical hydrology, and so the lasting and genuine success of spas, depends on research, and it is desirable to emphasise the principle that the only real advertisement of a spa is the publication of good research work into the properties—chemical, biological, and therapeutical—of the waters and into the diseases which can be beneficially treated thereby. It is to their honour that the municipality of Buxton have recognised the value of such work and have contributed to the salary of the analytical chemist attached to the research laboratory of the Devonshire Hospital."

"The Prosperity of Buxton" was proposed by the Duke of Devonshire, who said that people talked in these days about the key industries; he thought the key of all industries was health. Buxton, he said, had made a real contribution to the subject. In reply to the toast of "The Guests," proposed by Alderman C. W. Buckley, M.D., Sir W. H. Willcox and Dr. R. A. Fleming responded.

The guests included the Duke of Devonshire, Lord Hartington, the Lord Mayor of Sheffield, the Mayors of Salford, Bath, Stockport, Derby, Ilkeston, Macclesfield, and Leamington, the Rev. J. Stainer Wilkinson, Sir W. H. Willcox, Dr. G. Newton Pitt, Sir J. W. Moore, Canon Scott-Moncrieff, Sir W. J. Thompson, Dr. H. R. Spencer, Dr. F. J. Poynton, Dr. R. A. Fleming, Dr. R. Fortescue Fox, Sir James Barr, Dr. W. J. Tyson, Mr. A. R. Courtenay, Dr. J. D. Stanley, Dr. E. P. Poulton, Dr. W. Edgecombe, Dr. Langdon Brown, Dr. C. Wilson, Dr. J. S. Bury, Dr. A. G. Gibson, and Alderman T. H. Cooper.

On the following day the guests were entertained to luncheon at the Buxton Hydropathic, and were taken for drives through the picturesque Peak District by the corporation.

ROYAL UNITED HOSPITAL, BATH.

OPENING OF PRIVATE AND ORTHOPÆDIC WARDS.

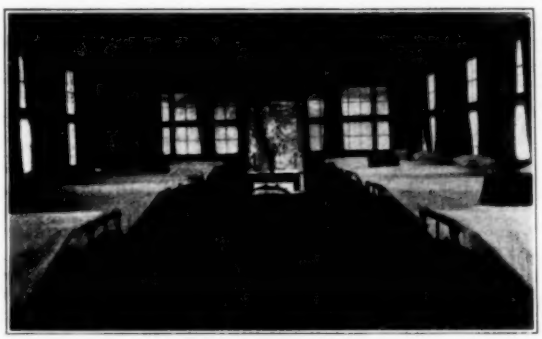
ON May 16th an extension of the Royal United Hospital, Bath, was formally opened by the Duke of Connaught, who was welcomed by Lieut.-Colonel E. Lewis, deputy chairman of the Royal United Hospital, acting for Sir Percy Stothert, chairman, who was unavoidably absent through illness. The Royal United Hospital was formed in 1826 by the amalgamation of two hospitals, and in 1866 a new wing was added as a memorial to Prince Albert. The hospital, which serves the city of Bath and an area of 20 miles round, occupies a site in the city which does not allow of any further extension. A scheme for an

extension on a new site, and provision of paying wards for persons of moderate means, was placed before the managing board in 1920 by certain members of the staff of the hospital, the suggested site being the land at Combe Park on which the Bath War Hospital was built in 1915. This scheme was subsequently adopted at a public meeting in the Guildhall, Bath. The site at Combe Park, consisting of about 20 acres, was purchased, a portion being retained and the remainder leased to the Pensions Ministry, which had taken over the war hospital. On the portion retained, the private hospital and an orthopædic hospital for the treatment of surgical tuberculosis in children have been erected. The private hospital is a one-storey building with a total accommodation of 72 beds. In the admission of patients preference will be given to those from Bath and the area covered by the Royal United Hospital, but others will be admitted provided there are beds available. All patients can be attended by their own doctors.

FIG. 1.

Royal United Hospital, Bath. General View of the Private Wards.
[*Photos by permission of "Bath Herald."*

FIG. 2.



Interior of a Ward (12 Beds).

About 100 yards to the north of the private hospital is the orthopædic ward, consisting of one large open-air room about 80 feet long and 30 feet wide, giving accommodation for the reception of 37 patients. The ward faces due south and is open in its entire length, but has a sun balcony in front of it partially covered by a lean-to glass roof. The surgical staff consists of members of the staff of the Royal United Hospital, and there is a specially trained nursing staff. In accordance with the requirements of the Board of Education, children while undergoing treatment in hospital will be educated by a fully qualified school-mistress.

It is proposed that this shall be the central unit of an organisation covering the area served by the Royal United Hospital in parts of Somerset, Wiltshire, and Gloucestershire, on the lines of the Wingfield and Shropshire Orthopædic Hospitals, and local clinics will be established at suitable centres throughout the area at which will be carried out out-patient treatment, periodical inspection of all outside cases, the examination and diagnosis of new cases. A specially trained orthopædic after-care sister from the central hospital will visit them regularly, and members of the surgical staff of the hospital will attend at stated intervals. These clinics will be controlled by local committees in coöperation with the medical men practising in their neighbourhood.

On Wednesday, May 28th, a meeting will be held at the hospital by the Bath Division of the British Medical Association, which will be in the nature of an official medical opening of the new wards. These will be open for inspection, and Lord Dawson of Penn will deliver an address.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

Cyanogen Chloride for Fumigation.

SINCE the introduction of cyanogen as a fumigating agent on board ships several fatal accidents have been reported from various parts of the world, so that it became evident that either a very valuable disinfectant—fatal in comparatively low concentration both to insects and vermin yet comparatively non-injurious to cargo—must either be abandoned or else improved precautionary measures must be introduced. The United States Public Health Service has been experimenting with the latter object in view and during the last year has elaborated a chemical safeguard which has so far given most satisfactory results. It consists in combining the cyanogen with chlorine so that the poisonous fumes may give urgent warning of their presence. Cyanogen chloride is said to be produced by a chemical reaction which is expressed as follows:—

$$3\,NaCN + NaClO_3 + 6\,HCl = 4\,NaCl + 3\,H_2O + 3\,CNCl.$$

The following prescription furnishes sufficient gas for the fumigation of 1000 cubic feet:—

Sodium cyanide	℥iv.	Hydrochloric acid ..	℥xvii.
Sodium chlorate	℥ii.	Water	℥xvii.

During the last nine months this gas has been used as a routine at the port of Baltimore quarantine station. On two occasions stowaways have escaped the vigilance and warning cries of those sent down to clear the hold—on one occasion the man said that he was asleep in his hiding place, and on the other he escaped without being noticed to the deck, where he hid in a coil of rope. Both men were driven off the ship by the "tear-gas" action of the new compound before the cyanide action had time to cause any serious injury. It is found, too, that by the time the former action is lost through dilution, the latter has also disappeared.

I understand that the only reason which has prevented the Public Health Service from publishing this discovery is its natural anxiety to give the method a thorough trial and to perfect the technique. It was found at Baltimore, for example, that there is danger of causing fire through the excessive heat developed in the chemical reaction, and that this danger could be obviated by first dissolving the sodium chlorate in water, so that those making the mixture are obliged to dilute the final solution to a certain degree. I had the privilege of witnessing a demonstration, and noticed the bright yellow fumes of cyanogen chloride and the very marked irritant effect on the mucous membranes of those who were imprudent enough to sample even a small and well-diluted dose.

Automobile Accidents in 1923.

Estimates issued by the National Bureau of Casualty and Surety Underwriters indicate that the 1922 record number of fatal automobile accidents has been exceeded by some 2000 deaths in 1923. Accidents occurring at level crossings are still a common source of fatalities, despite the terrifying pictures exhibited at all railway stations showing with vivid realism the immediate preliminaries to such a disaster. These accidents included, the total amounts to more than 17,000 deaths. Roughly, one-third of the slain were children under 15 years of age.

Tuberculosis Research at Johns Hopkins Hospital.

A great deal of work on the nature of infection and the development of immunity in tuberculosis has been carried out in recent years at Johns Hopkins. The results have not been spectacular, but on the other hand a foundation is being laid, a foundation of fundamental knowledge derived from carefully controlled animal experimentation which is certain to prove of great value to tuberculosis research everywhere. Much of this work has been published in your columns. In giving their report this week of the "work in progress in the Kenneth Dows Tuberculosis Laboratory" Dr. A. K. Krause and Dr. H. S. Willis reminded the Medical Society of Johns Hopkins Hospital of the important distinction to be drawn between tuberculosis in the guinea-pig and in the rabbit. The former shows pathological changes associated with the absence of lymphatic tissue in the parenchyma of the lung and its abundance at the hilum, the latter a pulmonary type of tuberculosis associated with lymphatic deposits at every bifurcation of the bronchial tree with atrophied glands at the hilum. The experimental guinea-pig thus corresponds very closely with the infected human child, the experimental rabbit anatomically and clinically reproduces the human adult.

The recent work hitherto unpublished includes experiments to determine the rate of migration of infecting bacilli in normal and in allergic pigs. An intradermal dose of living bacilli was given to young guinea-pigs and their migration controlled (1) by removal of an area of skin for 15-18 mm. around the point of inoculation at varying intervals after the injection; (2) by removal of the neighbouring lymphatic nodes at varying intervals and examination of same for bacilli. The experimenters were surprised at the rapidity with which the bacilli found their way in normal animals to a distance from the point of injection into the skin. Within four hours (in one case within a single hour) they had traversed the area of skin excised. It took from 10 to 24 hours to reach the nearest lymphatic gland. In allergic animals, on the other hand, the time was very greatly increased. Three to four days were needed to traverse the area of excised skin and as much as two to three weeks to reach the nearest lymph-nodes. Another set of experiments was designed to determine whether continuous reinfection with sub-lethal doses could bring about a progressive and fatal tuberculosis. The R1 strain—an avirulent bacillus originally isolated by Dr. Trudeau at Saranac Lake—was selected for this experiment. It was found that 86 daily intradermal injections did not have this effect, only a slight depression of allergy resulted. A second batch of animals given daily inoculations were killed on the sixty-ninth day. Although there were multiple subcutaneous abscesses no visceral tuberculosis was observed. However, the interesting observation was made that all the serous membranes were covered with adhesive exudate. This phenomenon Dr. Krause does not explain—he proposes to investigate it further. Again, a third batch of animals were given daily inoculations for from 30 to 50 days and then inoculated with a virulent germ. Comparison with controls (normal animals and animals inoculated with a single dose of R 1) indicated that the immunity had been lowered to some extent by the series of inoculations.

I understand that the whole series of experiments are to be reported in detail in a forthcoming number of the American *Review of Tuberculosis*.

INFECTIOUS DISEASES IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 10TH, 1924.

Notifications.—The following cases of infectious disease were notified during the week—namely: Small-pox, 82; scarlet fever, 1420; diphtheria, 627; enteric fever, 65; pneumonia, 1011; puerperal fever, 29; cerebro-spinal fever, 9; acute poliomyelitis, 6; acute polioencephalitis, 2; encephalitis lethargica, 290; dysentery, 2; ophthalmia neonatorum, 119. No cases of cholera, plague, or typhus fever were notified. The cases of encephalitis lethargica showed an increase on the figure 278 of the previous week.

Deaths.—In the aggregate of great towns the deaths from influenza fell further from 107 to 95. In London the deaths from diphtheria fell to 7, those from measles to 22, while the deaths from influenza numbered only 11.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Act. Surgeon Lts. (D) to be Surgeon Lts. (D): E. R. Longhurst, M. V. Barnes, C. J. Barrable, D. L. Simpson, and D. H. Le Marchant.

ROYAL ARMY MEDICAL CORPS.

Capt. G. Fleming retires receiving a gratuity.

ROYAL ARMY MEDICAL COLLEGE.

Maj. G. De la Cour, R.A.M.C., to be Professor, vice Lt.-Col. and Bt. Col. J. W. West, K.H.S., R.A.M.C.

TERRITORIAL ARMY.

E. L. Elliott (late Royal Navy) to be Capt.

J. C. Adam and C. Stewart to be Lts.

ROYAL AIR FORCE.

Flight Lt. W. D. Miller is transferred to the Reserve, Class D.2.

DEATHS IN THE SERVICES.

Deputy Inspector-General Archibald McKinlay, R.N., retired, who died on May 17th at Southsea, qualified as L.R.C.S.I. in 1872 and as L.R.C.P.I. in the following year, entered the Royal Navy as a surgeon in 1874, and was subsequently appointed to the *Nymphe* in Australia. In 1880 he joined the gunboat *Mosquito* in China, and saw active service in this vessel during the Egyptian War of 1882 (Egyptian medal and Khedive's bronze star). He was promoted to staff surgeon in 1886, and fleet surgeon in 1891. He retired in 1905.

Correspondence.

"Audi alteram partem."

THE MANCHESTER RADIUM INSTITUTE.

To the Editor of THE LANCET.

SIR,—The annotation in your current issue on the last annual report of the Manchester and District Radium Institute raises one or two points and omits others. For instance, it quotes the fact that 64 cases of malignant disease were rendered free from symptoms and signs of disease during the year, saying at the same time that the result is satisfactory enough as far as it goes, but many of these cases can only have been treated within a few months of writing the report, and the question of permanent benefit must be judged after a longer interval of time. This statement is obviously perfectly correct, but as a criticism it is not so good. Every year an annual report has to make a statement of what has been going on during the year. Therefore this quotation of 64 cases is merely that and nothing more. If any claim at all were to be made it would be merely that they were 64 examples of supremely good palliation. As a matter of fact, in a report of an institute such as the Manchester and District Radium Institute, one report alone cannot be regarded as an entity entirely separated from its fellows. In the year 1921, 2500 cases were reported upon, 1753 of which were malignant, none of which had been treated during the two years or more immediately preceding the report. The period dealt with was one of five years—viz., from 1915 to 1919 inclusive. I think it is only fair that those figures alone should be taken as a reasoned statement of what may be expected from radium treatment over a prolonged period.

Practically every year a smaller branch of the subject is dealt with, as it is manifestly impossible to go to the tremendous labour of dealing with thousands of cases each year in the report. In the report for the year 1923, for instance, carcinoma of the body of the uterus is dealt with in detail over a period of years, also cases of uterine hæmorrhage from various causes. In these cases the figures give an idea of what may ultimately be expected in radium treatment of these conditions. In the present report (for 1923) details of technique are given specifically in the case of carcinoma of the body of the uterus and uterine hæmorrhage, which are dealt with at length. It cannot be expected that each report will be a text-book, or part of a text-book, on radium treatment. As long ago as 1919 the technique of the use of unscreened tubes in the treatment of carcinoma of the mouth was given. The technique is perfectly simple and remains almost the same. The only thing being that now it seems to be firmly established that one millicurie of emanation in an unscreened glass tube left in a tumour indefinitely can be placed in each cubic centimetre of growth safely.

I do not regard the term "seeds" as being scientific. It is used in parts of the United States, although one of the most experienced radiologists there does not use the expression, but calls them "active points," while in the reports of the Manchester and District Radium Institute they are referred to consistently each year as unscreened tubes. This method of treatment of carcinoma of the mouth, and for that matter epithelioma of the vulva, is very satisfactory, and for that reason has been persevered with in Manchester. So far we have not used the French method of burying very small, screened quantities of radium in tumours of the mouth for long periods. I have not had the opportunity of personally seeing it done, and would rather do so before adopting a technique which, so far as I can hear, does not promise results better than those obtained from the use of unscreened tubes. With regard to the criticism of the treatment of cases of carcinoma of the breast, the statement concerning the use of diathermy is purely preliminary, and it does not seem justifiable at this stage to give too definite details as to the technique. The burying of emanation tubes along the course of the lymphatics is a perfectly simple procedure, and it needs nothing but a little practice. This procedure was dealt with in the report of the year 1916.

I feel that any critic of a report such as that of the Manchester and District Radium Institute should acquaint himself with what has already been written in the previous reports, and consider it merely as one of a series.

I am, Sir, yours faithfully,

May 19th, 1924. ARTHUR BURROWS.

BATHING AND EAR DISEASE.

To the Editor of THE LANCET.

SIR,—Now that the bathing season is about to commence, there is one question which might well be considered—namely, is it desirable in apparently healthy children to take precautions to prevent the entrance of water into the ears? The aural surgeons whom I have asked say that it is. Further, Milligan and Wingrave, in their "Diseases of the Ear" (p. 18), give among the causes of ear disease "the entrance of cold water into the external meatus, as in bathing and diving," and, indeed, it is easy to see how a breaking wave may cause inflammation of the membrana to be followed by middle-ear disease and deafness.

Valuable suggestions may be gained from nature. The seals, which are carnivorous mammals adapted for an amphibious life, have no external ears. In them "the auditory nerve is very large, and though the auricular aperture is closed by a mechanism somewhat similar to that which shuts the nostrils in order to protect the internal parts of the organ from the consequences of the great pressure of the water when the animal is in the deeps, it is evident that seals hear very well under water."[1] In his "Physiology" (1867, vol. i., p. 522) Marshall tells us that in the water-shrew the ear is provided with a valve-like antitragus, to prevent the entrance of water into the ear when diving.

When one considers how serious is ear disease, and how easily the entrance of water can be prevented, either with a pad of non-absorbent wool or the wearing of a rubber cap with ear flaps, it would seem that the precautions are worth while.

I am, Sir, yours faithfully,

WALTER EDMUNDS.

Carlton-road, Putney, S.W., May 15th, 1924.

THE PSYCHOLOGY OF VERTIGO.

To the Editor of THE LANCET.

SIR,—As you say in your leading article of May 10th, Dr. W. F. Menzies has succeeded in raising a problem of considerable interest, by drawing attention to the fact that vertigo may be of psychical origin, but his laudable desire to correlate mental with physical phenomena has prevented him from going far enough—psychologically. Dr. Menzies mentions that vertigo is accompanied by a fear of falling; but I agree with you, Sir, when you state that fear is not necessarily an accompaniment of vertigo. Nevertheless, it occurs invariably in association with vertigo of purely psychical origin. In anxiety states the fear of falling, with or without vertigo, is extremely common; the presence or absence of vertigo being dependent merely on the intensity of the fear.

Medical psychologists who have analysed this fear have discovered that it owes its origin to the repression of a desire "to fall" symbolically—i.e., in a moral sense. We find that the same symbolism applies to the falling dream and to hallucinations of falling in psychotic cases, these being the disguised fulfilment of an unconscious wish to fall *morally*. It occurs in anxiety states because the unconscious wish is strong enough to escape the repressing forces in symbolic

[1] Knight's Cyclopædia of Natural History, 1856.

guise; in other conditions it is due to weakening of the repressing forces. Now, in mental disease of toxic or organic origin, such as acute confusional insanity or general paralysis, the effect of the damage to the cerebral cortex is to weaken the repressing forces, the moral, social, ethical, and conventional instincts, the ego instincts as they have been called; the unconscious thus obtains an opportunity for self-expression and the unconscious *desire* to fall becomes represented in consciousness by its opposite—*fear* of falling—with or without vertigo.

The reason why the symptom, when present in the early stages of general paralysis, disappears later is that in advanced general paralysis the patient's repression is completely destroyed, and he then fully realises his formerly unconscious, but now conscious, wishes by, for example, delusionally possessing thousands of concubines and impregnating the lot every night of his life. My contention is that the semicircular canals have nothing whatever to do with this kind of vertigo.

May I add that giddiness or fear of falling when standing on a height arises in yet another way. It is always traceable (in my experience) to one or more forgotten height incidents in early childhood, usually about the end of the first year of life. Probably the patient has not reached emotionally to the situation at the time; but as soon as it is revived in his memory he is cured of the fear. The psychology of sea-sickness, to which Dr. Menzies also alludes, is yet another story. Medical psychologists are familiar with dozens of ways in which patients associate the sea with their mother—in other words, the sea is a mother symbol. For our present purpose we need only refer to one of these associations—viz., the respiratory rise and fall of the mother's breast while the child is taking food. The rise and fall of a boat during a sea voyage tends to remind certain people of this forgotten situation in an unconscious way, and sea-sickness with its rejection of food is a mode of repressing this infantile memory.

I must not occupy more space by confirmatory details; I only wish to offer a hint that some forms of vertigo are due to purely mental mechanisms, having no relationship with the semicircular canals.

I am, Sir, yours faithfully,

W. H. B. STODDART.

Cavendish-square, W., May 17th 1924.

POINTS IN THE ADMINISTRATION OF INSULIN.

To the Editor of THE LANCET.

SIR,—The discomfort arising from the injection of insulin may be considered under three headings: (1) the prick of the needle, (2) the sensation of stinging following the injection, (3) the inflammatory reaction developing hours later.

(1) The discomfort due to the prick of the needle is almost negligible if the injection be given by a skilled individual and the needle be sharp and polished. If the patient give himself the injection it may be of advantage for him to be acquainted with the fact that some spots in the skin are more sensitive to pain than others. Occasionally the point of the needle is placed upon a pain spot and very considerable discomfort is felt on pressing the needle into the skin. Moving the point a very little may save much pain.

(2) The stinging sensation following immediately upon the injection, of which a small percentage of patients complain, is due to the insulin solution being slightly acid and distinctly hypotonic. If the sting were to be experienced, say, a few times or perhaps limited to 50 times, few patients would complain, but since many must be stung 700 times a year, it is surely worth while attempting to save them the discomfort. The manufacturers informed me that there are difficulties in dissolving insulin in isotonic solution, and that it is essential for the solution to be acid. The reasons were communicated to me, but are not of general interest. The method of overcoming the discomfort is by rendering the injection practically neutral—i.e., to a hydrogen-ion concentration of pH 7·6 and isotonic with blood. For instance, a solution containing 1·8 per cent. sodium chloride and N/1000 sodium hydrate when mixed with equal parts of one commercial brand of insulin will render the injection painless. It is true that the mixture will become cloudy owing to the precipitation of the insulin, but experience has shown that this suspension of insulin is just as efficient when injected as the solution of insulin. Naturally, the injection must be made very shortly after the two solutions have been mixed. I have found that small children who dreaded the sting now receive the neutral isotonic mixture with a smile.

(3) The inflammatory reaction developing hours after the injection of insulin has become rarer since insulin has become more and more pure. But even now a very small percentage of people develop it after the injection of one kind of insulin, and may not after the injection of another. Usually some brand of insulin may be found which satisfies the patient.

I am, Sir, yours faithfully,

May 13th, 1924. O. LEYTON.

Medical News.

UNIVERSITY OF CAMBRIDGE.—At a congregation held on May 17th the following medical degrees were conferred:—

M.D.—C. M. Billington and *A. S. Burgess, Caius: D. V. Pickering, Emmanuel; and B. E. Jerwood, Sidney.

B.Ch.—W. H. Craib, Caius; J. C. Ainsworth-Davis, Christ's.

* Admitted by proxy.

UNIVERSITY OF OXFORD: *Radcliffe Prize.*—The next award will be in March, 1925. The prize, which is of the value of £50, is awarded by the Master and Fellows of University College, Oxford, every second year for research in any branch of medical science, comprised under the following heads: human anatomy, physiology, pharmacology, pathology, medicine, surgery, obstetrics, gynæcology, forensic medicine, hygiene. The prize is open to all graduates of the University who have proceeded, or are proceeding, to a medical degree in the University. Candidates must send in their memoirs to the Assistant Registrar, at the University Registry, on or before Dec. 1st, 1924.

UNIVERSITY OF PARIS.—The Faculty of Medicine of the University announces a post-graduate course to be held at the Clinique médicale de l'Hôtel Dieu from June 30th to July 11th under the direction of Prof. M. A. Gilbert and Dr. M. Maurice Villaret. The subject of the course will be Recent Medical and Chirurgical Advances in Diseases of the Liver, of the Biliary Passages, of the Pancreas, and in Connexion with Diabetes. The course will consist of 32 meetings and will be provided with abundant illustrative clinical material. It is open to all qualified medical men and a laboratory fee of 150 francs is charged. The full programme and further particulars may be obtained from the Secretary, Faculté de Médecine, Université de Paris.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At a meeting of the College held on May 16th, Sir Harold J. Stiles, President, in the chair, the 19 successful candidates out of 36 entered, who passed the requisite examinations between Jan. 14th and 18th, 1924, were admitted Fellows:—

John S. Bow, William G. H. Cuscaden, Thomas Gardner, Arthur J. C. Hamilton, David Huey, Shankar R. Joglekar, Ratenshah N. Kapadia, Havelock T. Lippiatt, Malcolm R. MacCharles, James S. McLaren, Otto W. Niemeier, John S. O'Neill, Montague M. Ostrowick, Richard R. M. Porter, Kenneth M. Purves, Douglas H. Saunders, Frederick N. Spittel, Harry W. Whytock, and George A. W. Wickramasuriya.

At the same meeting the Bathgate Memorial Prize, consisting of bronze medal and set of books, was, after a competitive examination in Materia Medica, awarded to Mr. Cecil A. S. Hamilton.

The following candidates having passed the requisite examinations received the Higher Dental Diploma:—Geoffrey M. Yardley, Robert M. Meldrum, and Wilfred J. J. Craig.

ABERDEEN UNIVERSITY CLUB.—The bi-annual dinner of the Club will be held at Gatti's Restaurant, Strand, London, W.C. 2, on Saturday, May 31st, at 7.30 P.M. Prof. Harrower will preside. The hon. secretary, Dr. W. A. Milligan, 11, Upper Brook-street, W. 1, will be pleased to hear from either past or present graduates (men or women) wishing to join the Club or attend the dinner.

FEDERATION OF MEDICAL AND ALLIED SERVICES.—The Prime Minister will attend the annual dinner of the Federation on June 20th, as will also the Minister of Health and Sir William Joynson-Hicks, M.P., the late Minister of Health. It is particularly requested that applications for tickets, price 12*s.* 6*d.*, be made to the Secretary as early as possible, at 12, Stratford-place, London, W. 1. The function will provide an excellent opportunity for medical men and their friends to meet prominent political and business men interested in preventive medicine.

CHADWICK PUBLIC LECTURES.—A lecture (illustrated by lantern slides) on Women in Dangerous Trades, by Miss Constance Smith, will be given in the Lecture Hall, Bedford College, Regent's-Park, N.W., on Tuesday, May 27th, at 8 P.M. Miss Tuke will be in the chair.—On Wednesday, June 4th, at 5.15 P.M., an open-air lecture will be given by Sir David Prain in the Chelsea Physic Garden, Swan-walk, Chelsea, on the Economic and Hygienic Relationships of Cinchona Bark and its Alkaloids. Sir William J. Collins, chairman of the Chadwick Trustees, will be in the chair.

ROYAL SANITARY INSTITUTE.—A sessional meeting of the Institute will be held on Friday, May 30th, in the Royal Spa Rooms, Harrogate, at 5.15 P.M., when discussions will take place on Public Health Services—Are They Worth the Money Expended? to be opened by Dr. J. R. Kaye, medical officer to the West Riding County Council. Openers of the discussion from the point of view of Medical Officer, Dr. J. J. Buchan (Bradford); Sanitary Inspector, Mr. T. Foley Cass (Chief Sanitary Inspector, Hull); Health Visitor, Miss A. Brooke (Inspector of Midwives and Health Visitors, W.R.C.C.). The chair will be taken by Dr. John Robertson. Those proposing to attend the meeting should notify Dr. J. Mair, medical officer of health, 5, Haywra-crescent, Harrogate, immediately.

MILK-SUPPLY TO HOSPITALS.—An arrangement has now been completed under which the Hospital for Sick Children, Great Ormond-street, and the National Hospital for the Paralysed and Epileptic take between them the entire milk output of a dairy farm. The farm, which is situated at West Hill House, Culworth, Banbury, is open to the inspection of representatives of the hospitals, and the milk, after its arrival in London, is submitted to a series of tests for food values and absence of deleterious substances. The conditions under which the milk is produced are ideal. The cows are milked by Vaccar milking machines, and every vessel with which the milk comes in contact has been subjected to sterilisation by steam. Finally the milk is placed in hermetically sealed churns, which are not opened until they reach the hospitals. For the children in the Great Ormond-street institution the milk is pasteurised in bottles before being delivered to the wards.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—The programme for the month of June comprises a special course in Gynæcology at the Chelsea Hospital for Women covering the whole month, commencing on June 2nd; and a series of eight clinical demonstrations from June 3rd to 27th on the more important diseases of tropical countries by Dr. G. C. Low and Dr. P. H. Manson-Bahr at the London School of Tropical Medicine. In addition to the foregoing there will be an intensive course at the Royal Northern Hospital in conjunction with the Royal Chest Hospital (City-road) from June 16th to 28th. Beginning on June 16th, and continuing until July 12th, will be held a four weeks' course in Urology at St. Peter's Hospital for Stone. Clinical work will be available daily and lectures given dealing with the various aspects of urinary disease. Also commencing on June 16th to July 4th, a two weeks' course on Diseases of Children at the Children's Clinic (Western General Dispensary). For full particulars of the above courses application should be made to the Secretary, Fellowship of Medicine, 1, Wimpole-street, London, W.1.

BRUSSELS MEDICAL CONGRESS.—The Fourth Congress, known as the "Journées médicales de Bruxelles," will be held in the Palais d'Egmont from June 29th to July 2nd under the patronage of the King and Queen of the Belgians. During the four days of the Congress, which is open to medical men and women, clinical demonstrations and operations will be shown in the hospitals during the forenoon, and in the afternoons lectures and cinematographic illustrations will be given. A very interesting programme has been arranged, and among those attending the Conference will be Dr. Alexis Carrel, of the Rockefeller Institute of New York, Prof. Bordet, and Dr. Levaditi. On the fourth day the Congress will be held at Liége. During the Congress an exhibition of pharmaceutical products, surgical instruments, and hospital furniture will be held in the Palais d'Egmont. The fee for the Congress is 40 francs, and further information, together with full programme, may be obtained from Dr. René Beckers, general secretary, 36, rue Archimède, Brussels.

ROYAL MICROSCOPICAL SOCIETY.—The section of the Society which has been formed to deal with the Industrial Applications of the Microscope, and to assist in the development of Industrial Research in British Industries, will hold its next meeting at 20, Hanover-square, W., on Wednesday, May 28th, at 6.30 P.M., Mr. A. Chaston Chapman, F.R.S., presiding. Mr. J. E. Barnard, F.R.S., will give a résumé of the whole subject; and communications will be made by Mr. E. Sheldon Leicester on the Use of the Microscope in the Examination of Paper, and Mr. Kenneth MacLennan on the Microscopy of Soaps. Messrs. R. and J. Beck, Ltd., and Messrs. Ogilvy and Co. will demonstrate some optical exhibits. Further particulars may be obtained from the hon. secretaries to the Section, at 20, Hanover-square, London, W. 1.

DUBLIN: THE HOSPITALS AND THE GAS STRIKE.—Recently the workers of the only gas company in Dublin went on strike, with the result that users not only in the city, but in all the suburbs for miles round have been left without gas, and much inconvenience and even hardship have resulted. In the hospitals and scientific laboratories there is also much inconvenience, from which the sick have to suffer. Sterilisation of dressings and instruments has become a matter of great difficulty, and X ray departments are in many cases held up. Bacteriological incubators have grown cold, and it is quite possible that some strains of organisms will perish. The inconvenience has been increased by the neglect of the gas company to warn its customers of the likelihood of a cessation of work until a few hours before the supply ceased, although there was nothing in the nature of a "lightning strike."

CO. GALWAY HEALTH SCHEME.—In pursuance of the resolutions passed at a recent meeting of the medical profession of Co. Galway, already reported in THE LANCET (May 3rd, 1924, p. 918), a deputation waited upon the Minister for Local Government last week for the purpose of laying before him their views in connexion with (1) the scheme of the Galway Co. Board of Health for the rearrangement of the dispensary districts and the reduction of the number of dispensary medical officers; (2) the lack of hospital accommodation for the sick poor and the necessity for providing cottage hospitals in the county. The deputation urged on the Minister the necessity, both in the interests of public health and the sick poor, of providing a number of cottage hospitals in different parts of the county for the treatment of acute cases of illness where removal to the Central Hospital at Galway would expose the patients to grave risks, and where the home surroundings did not permit of efficient medical treatment. In reply, the Minister assured the deputation that there would be no reduction in the number of dispensary districts in the county, but that, as vacancies arose, the existing district arrangements would be open to review. He undertook to consider fully the question of providing cottage hospitals.

DONATIONS AND BEQUESTS.—Mrs. Lucy Forrest, of Marlow, Bucks, left £500 each to the Marlow Cottage Hospital and the Marlow Provident Nursing Association.—Mr. William Smith, of Honeybourne, Gloucestershire, who left estate valued at £26,261, gave it on trust as to one-fourth each to the following institutions: the Evesham Hospital, the Worcester Infirmary, the Stratford-on-Avon Hospital, and the Birmingham General Hospital.—Under the will of the late Miss Florence Annie Holmes, of Hove, Sussex, the Hove Hospital will benefit by a sum of £500.

THE LATE MR. WALTER THOMPSON.—The death of Walter Thompson, F.R.C.S., took place on May 12th at Headingley Leeds, at the age of 58. Mr. Thompson was a Yorkshire man, and was the son of a farmer in Wharfdale. He pursued his medical studies at Leeds and Berlin, qualified M.R.C.P. in 1887, and in 1891 became a Fellow of the Royal College of Surgeons of England. Mr. Thompson has for many years been an honorary surgeon and later consulting surgeon on the staff of the Leeds General Infirmary, and held honorary surgical appointments at other hospitals, including the Coronation Hospital, Ilkley, and the Malton Cottage Hospital, the Leeds Public Dispensary, and the Women's and Children's Hospital. During the war he rendered valuable service at Salonica, although he was not in the best of health when he volunteered for active service. He held the rank of Lieut.-Colonel in the R.A.M.C.T. On his return from Salonica Mr. Thompson was appointed head of the Beckett-street Military Hospital, in which he did much successful work until the end of the war. For some years he was Lecturer on Practical Surgery in the University of Leeds. Last November he was operated on for an internal malady by his close personal friend, Sir Berkeley Moynihan. His death was felt as a distinct loss to the medical profession both in Leeds and the surrounding district, and the esteem in which Mr. Thompson was held was attested by the large number of medical men from Leeds and district who attended his funeral.

NORTH-WESTERN TUBERCULOSIS SOCIETY. — An address, illustrated by lantern slides, will be given by Mr. H. Morriston Davies at the next meeting of this society, to be held at the Tuberculosis Offices, Joddrell-street, Deansgate, Manchester, on Thursday, May 29th, at 3.15 P.M.

CONFERENCE ON SCIENCE AND LABOUR.—This Conference, which has been arranged by the British Science Guild in coöperation with the National Joint Council of the Trades Union Congress and the Labour Party, will be held at the British Empire Exhibition on May 30th and 31st, and will be opened by the Prime Minister. There are to be five sessions, the subjects of discussion being: (1) the Place of Science in Government; (2) Scientific Research in Relation to Industry; (3) Coöperation of Science and Labour in Production; (4) Science and the Human Factor; (5) Science in Educational Organisation. The fourth meeting will deal with Health and Psychology. Miss Margaret Bondfield, M.P., will preside, and the speakers include Sir Arthur Newsholme, Dr. C. S. Myers, Dr. Cyril Burt, and Miss May Smith. Copies of the programme and tickets of admission may be obtained by application to the Conference Secretary, 15, Gower-street, London, W.C.1.

MEDICAL EXAMINATION OF YOUNG PERSONS FOR FACTORY EMPLOYMENT.—The report of the Departmental Committee appointed by the Home Office to investigate this subject has now been issued (H.M. Stationery Office. Cmd. 2135. 6*d*.). The personnel of the Committee are Mr. Rhys J. Davies (chairman), Mr. Gerald Bellhouse, Dr. R. Wallace Henry, Mr. J. Moore Murray, Mr. Sydney W. Pascall, Mrs. Clara D. Rackham, Mr. W. J. Tout, and Mr. Arthur H. Wood, with Miss Rose E. Squire as secretary. The Committee have come to the conclusion that the present system is defective in the following respects: (*a*) The form of certificate is unsatisfactory in that it is negative, not positive; (*b*) the medical examination is, with certain notable exceptions, superficial and sometimes purely perfunctory; (*c*) re-examination during employment in a factory is unprovided for; (*d*) coördination with the school medical service and other public health services of the locality is lacking; (*e*) suitable accommodation in the factory for the medical examination is often absent and its provision is not compulsory. The more important of the recommendations for arrangements to be adopted in the future are that the age for examination should be raised from 16 to 18 years; that the form of the certificate should be positive instead of negative—i.e., it should be to the effect that the young person is physically fit for employment in the factory; and that the standard of examination, the form of certificate, and the nature of the conditions which may be attached to qualified certificates should be prescribed by the Home Office, which should supervise the work of the surgeon. A retaining fee should be paid to the surgeon out of public funds for the examination of factory processes, the making of an annual report, and re-examinations of employees when required. The fee for examination on entering employment in a factory should continue to be paid by the occupier. It is, moreover, recommended that the local authorities should at once be invited to submit schemes for taking over examination and certification of young persons, and that the aim in view should be that if the voluntary trial made by local authorities proves successful, the transfer of the whole of this work to the local authorities should be ultimately effected by order of the departments concerned.

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Parliamentary Intelligence.

HOUSE OF LORDS.

THURSDAY, MAY 15TH.

CRIMINAL RESPONSIBILITY (TRIALS) BILL.

Lord DARLING, in moving the second reading of the Criminal Responsibility (Trials) Bill, said its object was to alter the law in one important respect regarding trials where the insanity of the person accused was alleged. The Committee which was appointed by the late Lord Chancellor, Lord Birkenhead, to inquire into this question made a report some months ago, and he thought that action would have been taken by someone far more capable than he could pretend to be. But nothing had been done. He was perfectly well aware that there would be considerable opposition to the Bill he now brought forward, which might develop into a pitched battle. But it had often happened that some poor *franc-tireur* had begun what had in the end become a most important victory. The law had long been that insanity as recognised by the law of England entitled the accused person to escape capital punishment. Until 1883 the law was that in such a case, if the jury came to the conclusion that the accused was insane, the verdict was "Not guilty," because the accused was insane at the time of committing the crime; and therefore the accused was ordered to be detained during His Majesty's pleasure in a lunatic asylum. One of the improvements he desired to make involved the repealing of the statute of 1883, for the passing of which there were no good reasons. The 1883 Act altered the law in this respect: that if a person was proved to be insane the verdict was to be "Guilty of doing the act charged, but insane at the time." That was perfectly illogical and indefensible, and one of his proposals, which he hoped might induce their lordships to read the Bill a second time, if the rest had to be thrown over, was to bring back the law to what it was before this absurd statute was passed.

His reason for bringing in this measure was that there had long been a contest between the medical specialists and the law. These medical specialists had contended, and still contended, that directly they said that a person was insane in their sense he should be absolutely unpunishable, no matter what crime he may have committed. Some of them called themselves determinists; some of them contended that human beings were merely automatic creatures who acted with no control whatever over their motives or their actions. The law of England had never recognised that and he hoped never would. But it had recognised that a person might be insane in a legal sense and so entitled to a verdict of "Not guilty" where the act done, if done by a sane person, would involve a verdict of "Guilty" and a following punishment. It was so long since the law stood in that position that no doubt there must be some modification owing to modern research and recent knowledge. The noble and learned lord went on to refer to the murder in the year 1843 of Mr. Drummond, secretary to Sir Robert Peel, by a man named McNaghten. McNaghten was acquitted because insane, and he imagined that there was great public dissatisfaction with the result. As a result the judges were summoned to the House of Lords to give their opinions, and those opinions had been embodied in the Common Law of England ever since. Those opinions were expressed in certain statements known as the Rules in McNaghten's Case. Whenever a judge summed up in a case of murder he laid down the law in the terms of the advice then given. The two rules which mattered were these: The jury were told to inquire whether when he did the act which resulted in the death of the man the defendant knew the nature and quality of the act that he was doing; and to answer this further question: Did he know that the doing of the act was wrong? If so he was guilty. If he did not know this then he was not guilty on the ground that he was insane. Doctors of all descriptions had quarrelled with this and had said that it took no notice of a further possibility—that it simply dealt with the intellectual qualities of a man, and these were not exhaustive in the case of insanity. It was desired to add to the Rules in McNaghten's case another rule which he had ventured to propose in the present Bill. The McNaghten Rules were printed in the Bill, and it was desired to add to them that the accused was entitled to a verdict of not guilty on the ground that he was insane "if at the time the act was done or omission made which caused the death, he was suffering from such a state of mental disease as therefrom to be wholly incapable of resisting the impulse to do the act or to make the omission." That introduced what was known as the doctrine of irresistible impulse, which he recognised was a most controversial matter.

The noble lord, after quoting from pronouncements from high judicial and legal authorities on the subject, said he would like to ask Lord Sumner, who he understood was to move the rejection of the Bill, to state categorically whether he and those who thought with him recognised that there was actually such a thing as uncontrolled impulse due to disease of the mind. If they said "No" then they were in direct conflict with practically all the medical opinions of the day. If they said "Yes," then he asked further: Why have the man condemned; why not find that he was not guilty, because he could not control himself, and send him to a lunatic asylum? The Committee appointed by Lord Birkenhead on this matter were not psychologists or medico-psychologists. They were all practising lawyers with a good deal of experience in such matters. That Committee stated in their report: "It was established to our satisfaction that there are cases of mental disorder where the impulse to do a criminal act recurs with increasing force until it is, in fact, uncontrollable. . . . We appreciate the difficulty of distinguishing some of such cases from cases where there is no mental disease, such as criminal acts of violence or sexual offences where the impulse at the time is actually not merely uncontrolled, but uncontrollable. The suggested Rule"—(that was the Rule which he (Lord Darling) had put in this Bill)—"however, postulates mental disease: and we think that it should be made clear that the law does recognise irresponsibility on the ground of insanity where the act was committeed under an impulse which the prisoner was, by mental disease, in substance deprived of any power to resist." He simply asked their lordships to declare to be the law that which the Committee recommended should be made the law. The Rule as he would have it was already the law in Germany, Italy, South Africa, and Queensland. He would not trust juries to decide this or any other important question unless they received proper and adequate direction on points of law, but where they received such direction he believed juries were as sure as they could make sure of things in human affairs to come to a right verdict and to a verdict which satisfied the public conscience.

Lord SUMNER, in moving the rejection of the Bill, said it proposed to alter the law relating to the responsibility for crime committed by persons suffering from mental disease in a wholly novel and radical way. If their lordships gave the Bill a second reading they would give to this principle an approval which would be of the greatest gravity and which would make the Committee stage a wholly minor matter. Speaking for himself, he did not understand what was the supposed frame of mind in which a person did know the physical nature and quality of his act and did know that the act done was wrong and, notwithstanding, was suffering from such a state of mental disease that he was wholly incapable of resisting the impulse. He did not think it was right to add to the puzzles which juries had to solve by needlessly complicating the questions put to them in this sort of way. But since Lord Justice Atkin's Committee, adopting the view of a number of medical men who came before them, had said that it was established to their satisfaction that there were such cases he was prepared to accept their better opinion and agree that such cases there were.

As to why such a person should be condemned there were two or three answers. For 80 years such a person had been condemned if the jury had been of the opinion under the direction of the judge that he was not insane, and he did not notice in the report of the Committee or in the speech of Lord Darling that there had been any serious attempt made to show that actual injustice had ever occurred. Cases of mothers seized with an impulse to cut the throats or otherwise dispose of their offspring to whom they were normally devoted were not uncommon, but he never knew that there was any difficulty with regard to those cases. The wretched person no doubt was sentenced to death, but the exercise of the prerogative of mercy was as certain as that the sun would rise next day. Could it be that they wanted more than the exercise of the discretion of the judge for the purpose of dealing with cases which were not very numerous and in which they would not succeed in satisfying the medical profession? Their lordships who read the very interesting report of the Committee will find that there were two schools represented before it. One was that of an institution bearing the somewhat appalling title of the Criminal Responsibility Committee appointed by the Medico-Psychological Association of Great Britain, and they stood up for what he understood to be the view of alienists of the extreme school, the view that the law could not define insanity, that judges could not direct juries as to what was insanity, and that the only way in which these cases should be tried was to let the medical expert tell the jury what he thought about it, and then let the jury say for itself, out of its own head, whether a man was to be convicted or acquitted. There were even persons who went further than that, and said the inquiry ought not to take place in the presence of a jury, or by a jury, but in camera, by medical men specially qualified to pronounce whether minds were diseased or not.

The defence of insanity was constantly a speculative defence, raised on the chance of getting round the jury somehow. It was also in a large number of cases a rich man's defence. He greatly dreaded not that there would be an increase in the number of murders, but a considerable increase in the number of crimes of violence on women and children if a defence like this should be legal and should once have a success. Before they paid very much attention to the medical side of this question they ought to weigh against it the opinion and experience of the judges of England. He did not think there had been any serious dispute or criticism from the judges, and very little from the legal profession of the adequacy and substantial justice of the Rules in McNaghten's case. He was satisfied that criminals were deterred both by the certainty of punishment and the fact that it was speedy and that it would be a mistake to remove from these irresponsible beings that outside pressure which was exerted at present by the knowledge that if they failed to control what they ought to control they might find themselves punished by the law. Above all, they ought to consider not so much the fortunes or interests of a particular criminal, but the cause of the public at large.

Lord HEWART, Lord Chief Justice of England, in supporting the motion for rejection of the Bill, said he had not had an opportunity of consulting all his colleagues, the judges of the King's Bench Division, who were also the judges of the Court of Criminal Appeal, upon this matter. But he had consulted 12 out of 15. Of these 10 were like himself emphatically opposed to the measure, one was emphatically in favour of it, and one was doubtful. In cases where there was evidence of real mental disease antecedent to the commission of the alleged crime, and there was no evidence of a motive which might influence a sane person, juries had no difficulty in finding either that the accused did not appreciate the nature of his act or that he did not know it was wrong. But in cases where there was no such evidence of mental disease antecedent to the alleged crime mental experts might be found to say that the alleged crime itself afforded evidence that it was committed under irresistible impulse and that it might on that ground be inferred that there was mental disease. If that was so, the result might be to transfer to the medical profession the responsibility of the law in regard to a great number of ordinary criminals. Lord Darling had said that as medical science grew and as knowledge grew it was right that the criminal law should keep pace with it. Did his noble friend really mean that from time to time, as medical theory expanded, the rules of the criminal law were to be modified? Was it not far safer to say: Let medical science come with new meaning, with a changed meaning. The law would, however, still ask: Is this person to be excused because he did not know what he was doing, or if he did, because he did not know that what he was doing was wrong?

The LORD CHANCELLOR (Viscount HALDANE) said that almost invariably if a proposition was brought before the jury that the prisoner was through mental disease incapable of resisting the impulse to commit the crime somebody would be found to come forward and give expert evidence that a state of mental disease existed. He was not saying a word against the advance of medical science, which had been so notable during the last few years, or against the advantages of bringing psychology to bear where it could be useful. These scientists were excellent servants, but they were not always reliable masters. We had not recognised in this country the passion crime which was recognised on the Continent, and he hoped we should not recognise it. For his part, having given all the thought he could to the subject and read the admirable report of the Committee through and through, he could not bring himself to see that it would be a good addition to the law to introduce this new proposition. He was therefore unable to support the Bill.

Lord DUNEDIN, formerly Lord Justice-General of Scotland, and Viscount CAVE, formerly Lord Chancellor, also opposed the Bill.

Lord DARLING intimated that as his proposal had not been supported in debate he did not feel justified in asking that the Bill should be read a second time.

Lord Sumner's motion for rejection was formally agreed to.

Panel Doctors' Remuneration.

The National Insurance (Cost of Medical Benefit) Bill passed through Committee and was reported without amendment.

TUESDAY, MAY 20TH.

Tramways and Waterloo-road Hospital.

On the motion for the second reading of the London County Council (Tramways and Improvements) Bill,

Lord DENMAN moved that it be an instruction to the Committee to strike out from the Bill all powers relating to

the construction of a short line of tramway, the proposed route of which passes the Waterloo-road Hospital. He said that this hospital was doing good work and the noise created by passing trams might have an injurious effect upon the patients, as had been the case in regard to St. Thomas's.

Lord MONK BRETTON said that he had a great deal of sympathy with the suggestion that hospital patients should be kept as quiet as possible, but there were ten large hospitals in London, including St. Thomas's, which had trams running past them. It was an unreasonable thing for Lord Denman to propose that this part of the Bill should be struck out after the measure had been passed by the House of Commons and when it was promoted with the concurrence of every party on the London County Council.

The Earl of DONOUGHMORE, Chairman of Committees, said he would not feel justified in asking their lordships to do otherwise than follow the usual course of sending this Bill to a Committee. If the worst came to the worst no doubt this hospital could be just as well carried on elsewhere. He did not wish to pronounce upon the merits of the case, but he hoped that Lord Denman would be satisfied with having called special attention to this matter and would allow the usual course to be followed.

Lord BUCKMASTER and Lord MONTAGU OF BEAULIEU supported the proposed instruction.

On a division the instruction to the Committee was carried by 57 votes to 35.

The National Health Insurance (Cost of Medical Benefit) Bill was read a third time and passed.

HOUSE OF COMMONS.

WEDNESDAY, MAY 14TH.

Vivisection (Prevention of Public Expenditure) Bill.

Lieut.-Commander KENWORTHY, in asking leave to introduce a Bill to prevent the payment out of public funds of moneys for experiment on living animals, said that the measure in no way interfered with experiments being carried out by private experimenters under licence as at present, but a large sum of money was being spent by the Ministry of Health in subsidising these experiments. Last year, as far as he could gather, they spent £130,000, which was much too large a sum, and objectionable for many reasons. It would be much more valuable if this money could be spent on providing milk for expectant mothers, and in helping crêches in poor districts and for other useful purposes. He did not intend to interfere with bacteriological experiments or with ordinary medical research experiments, but only as regards these particular experiments.

Dr. SPERO submitted that more money rather than less should be spent on animal experiments. In such experiments animals were under an anæsthetic and felt no pain whatever. Insulin had to be tested on rabbits before it could be given to human beings. Without experiments on animals, therefore, there would be a number of diabetic patients who would not be alive. Adrenalin, which was used for hæmorrhage, pituitary during childbirth, and a number of other preparations were all of animal extraction. No doubt his hon. friend in the years to come would give up his anti-vivisectionist views and resort to the rejuvenating properties of monkey glands. Again, some drugs had to be standardised, and that must first be carried out on animals. The best-known drug in that category was salvarsan, used in the treatment of syphilis. If medical men were denied standardisation they would be unable to treat with safety that terrible disease. The national milk-supply was kept free from tuberculous bacilli by inoculating guinea-pigs with suspected milk. He would remind the House of the self-sacrificing work carried on by research workers. If they were denied animals they would be forced to experiment on themselves.

Leave was granted to bring in the Bill, which, beside Lieut.-Commander Kenworthy, is backed by Mr. Foot, Mr. Scrymgeour, Mr. Trevelyan Thomson, Mr. Ayles, Mr. Mills, Rear-Admiral Sueter, Mr. Wignall, Sir P. Richardson, and Mr. Hogge.

The Bill was read a first time.

Cost of Insurance Administration.

Mr. FOOT asked the Minister of Health if he was able to state what was the cost of administration for national health insurance cases in England, Scotland, and Wales respectively. —Mr. WHEATLEY replied: The total cost of administration of national health insurance in the year 1922 (including expenditure by all Government departments in connexion with the service) was as follows: England, £4,012,000; Scotland, £547,000; Wales, £288,500. There are no statistics available as to the cost of administration per case, if, as is assumed, the hon. Member means by a case an individual insured person who is actually in receipt of one or other of the benefits provided under the Acts. The total cost of administration given above represented in the case of both England and Scotland approximately 6*s.* 4*d.* per insured person per annum, and in the case of Wales approximately 7*s.*, and was in each case about 13 per cent. of the total receipts from all sources. There has been a reduction as from Jan. 1st, 1924, in the maximum amount allowed to be appropriated for the administration expenses of approved societies.

Water-supplies in Rural Areas.

Mr. ERNEST BROWN asked the Minister of Health whether any regular inspection of water-supplies in rural areas was carried out by his department.—Mr. WHEATLEY replied: Regular inspection is not carried out by my department, because the primary duty of looking after water-supplies rests with the local authorities, but a general survey is at present being made.

Infectious Disease Grants.

Mr. HARDIE asked the Minister of Health what was the amount of the yearly grants given by the Government for the treatment of infectious diseases; and the yearly amount rated for by local authorities for the same purpose.—Mr. WHEATLEY replied: The grants paid during the year ended March 31st last for the treatment of infectious diseases in England and Wales amounted to approximately £1,607,000. These grants were mainly in aid of the cost of the treatment of tuberculosis and venereal diseases, no grant being available generally for the treatment of the ordinary infectious diseases. The total amount paid out of the rates for the treatment of infectious diseases generally was approximately £5,088,000 in the financial year 1921–22, the last year for which complete returns are at present available.

The Health of the Navy.

Mr. CECIL WILSON asked the Parliamentary Secretary to the Admiralty for what year the last report on the health of the Navy had been published; and for what year the next report would be published, and when.—Mr. AMMON replied: The report for 1921 has just been published. It is expected that the next report (for the year 1922) will be published by the end of the present year.

Maternity and Child Welfare Grants.

Lieut.-Commander KENWORTHY asked the Minister of Health why there was a decrease in this year's estimates on the grants for maternity and child welfare (Class VII., Vote 1, Subhead G.1) of £70,000 in the case of England, and of £2000 in the case of Wales, as compared with last year's estimates; and whether every encouragement was being given to local authorities and voluntary agencies to help expectant and nursing mothers, and young children, under the Maternity and Child Welfare Act, 1918, and the Education Act of 1918.—Mr. WHEATLEY replied: As regards the first part of the question, the explanation is that the actual expenditure last year of local authorities and voluntary agencies for maternity and child welfare proved to be considerably below the provision made in the estimate for that year. The provisions made for grants in the estimate for this year is substantially in excess of the actual amount of grants paid last year, and includes the necessary provision for development of this service. The answer to the second part of the question is "Yes" so far as activities under the Maternity and Child Welfare Act, 1918, are concerned. Any question affecting the Education Act of 1918 should be addressed to my right hon. friend, the President of the Board of Education.

THURSDAY, MAY 15TH.

Final Pension Awards.

Sir CHARLES CAYZER asked the Minister of Pensions whether, in the case of men called up at the outbreak of war and who, having completed four years' continuous war service, were granted pensions on leaving the Army, especially men who were passed A 1 on mobilisation and left the Army B 3, and who had had their pensions upheld by three successive medical boards, he would grant these men life pensions, it being quite clear that in the case of men passed A 1 on mobilisation and B 3 on discharge the causes of their disabilities were entirely due to war service; and whether, in the case of men who had successfully appealed against a final allowance, he would empower the Appeals Tribunal Board to assess the damages immediately instead of putting the men forward for a further medical board, seeing that the policy suggested would save the country annually a very large sum of money in administrative expenses.—Mr. F. O. ROBERTS replied: The case of every officer or man who has been on the pension list for four years or more has to be considered for a final award under the provisions of Section 4 of the War Pensions Act of 1921. Wherever the case is found to be suitable for a final award, such an award is made. I am glad to say that in about 250,000 cases final awards of life pensions have already been granted. With

regard to the last part of the question, I may point out that wherever the appeal tribunal are able to assess compensation finally they do so, and their finding is acted upon by my department. It is only in cases where they are uncertain as to the prognosis of the case that they set aside the award made by the Ministry. The suggestion made by the hon. Member would not be practicable without legislation, and would very frequently not be in accordance with the best interests of the man concerned.

Treatment of War Neuroses.

Sir VICTOR WARRENDER asked the Minister of Pensions whether it was proposed to extend the present Ministry of Pensions hospital at Grantham into a hospital for neurasthenics.—Mr. F. O. ROBERTS replied: Patients suffering from neurasthenia have for some time past been admitted to this hospital for treatment. It is proposed, when accommodation is no longer required there for medical and surgical cases, to use the institution solely for neurological cases.

Regulation of the Use of Codeine.

Major CHURCH asked the Home Secretary for what reason codeine was omitted from the list of narcotics to which the Dangerous Drugs Act applied; and whether His Majesty's Government would advocate the inclusion of this drug in any forthcoming international convention for the restriction of the traffic in narcotics.—Mr. HENDERSON replied: The Dangerous Drugs Act was passed in order to give effect to the International Opium Convention of 1912, and codeine is not one of the drugs included in that Convention. I am advised that codeine is not generally regarded by medical opinion as a dangerous drug of addiction.

Bacillus of Foot-and-Mouth Disease.

Mr. GRAHAM WHITE asked the Minister of Agriculture if he had any information regarding the reported discovery of the bacillus of foot-and-mouth disease announced by Prof. Paul Frosch.—Mr. BUXTON replied: A communication was made recently by Prof. Frosch to a scientific society in Berlin, but the Professor did not fully disclose his method of procedure, and it is therefore impossible for others to confirm his experiments. It is understood, however, that full details will not be long delayed.

Tuberculosis in the Navy.

Sir BERTRAM FALLE asked the Parliamentary Secretary to the Admiralty the number of men invalided during the last 12 months from His Majesty's Navy through tuberculosis; how many of these were considered attributable to service; and how the decision as to whether tuberculosis was attributable to or aggravated by service was arrived at.—Mr. AMMON replied: The number of men invalided during the year 1923 for tuberculosis was 143. The number of attributable cases was three, apart from cases (if any) claimed to be due to war service. The latter would be dealt with by the Ministry of Pensions. The following method of arriving at a decision as to attributability to or aggravation by service is adopted when considering cases arising during the post-war period:—

Pulmonary Tuberculosis.—Attributability is only given in such cases arising: (1) By direct contact with another case, such as might occur in a sick berth rating from nursing, or from sleeping adjacent to a case; (2) from extraordinary exposure, or exertion on duty, such as war. Aggravation is given: (1) Where the medical history of the case has shown a definite tendency to lung disease and a sufficient continuity of such disease; (2) where there is a record of service in small craft, where the ventilation and cubic space are limited; (3) where the disease arises under climatic conditions which amount to more than the ordinary exposure incidental to naval service.

As regards other cases of tuberculosis, such as those arising in joints and localised organs, attributability or aggravation is only given in cases where there is definite evidence of injury to the part sustained on duty and where it is considered that the injury has caused a lighting up of the disease.

MONDAY, MAY 19TH.

Death-rate in Gold Coast Colony.

Mr. JOHN HARRIS asked the Secretary of State for the Colonies what was the death-rate by sickness and accident, respectively, in the gold mines of the Gold Coast Colony for the last complete year.—Mr. THOMAS replied: The death-rate from accident for the last complete year for which statistics are available—viz., 1921—was 1·39 per 1000 labourers daily employed. It has not been the practice to furnish figures of the death-rate from sickness. My predecessor, some time ago, directed that such statistics should be furnished, but I have not yet been able to obtain complete and accurate figures. The information which I have obtained, however, leads me to doubt whether the conditions of labour at the mines are satisfactory, and I propose to discuss the whole matter with the Governor at an early date.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

THE ROYAL SOCIETY, Burlington House, W.
THURSDAY, May 29th.—4.30 P.M., Prof. D. M. S. Watson, F.R.S.: The Structure, Evolution, and Origin of the Amphibia. (Croonian Lecture.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, May 26th.

ODONTOLOGY: at 5.30 P.M.
At the Royal College of Surgeons, by kind permission of the College.
Annual General Meeting:
Election of Officers and Council for 1924–25.
The Odontological Section of the Museum will be open for inspection by Members, and the Curator, Sir Frank Colyer, will show the specimens which have been recently added.

Tuesday, May 27th.

MEDICINE: at 5.30 P.M.
Annual General Meeting:
Election of Officers and Council for 1924–25.

Wednesday, May 28th.

COMPARATIVE MEDICINE: at 5 P.M.
Annual General Meeting:
Election of Officers and Council for 1924–25.
Paper:
Dr. F. E. Crew: Achondroplasia in Man and Animals, with Special Reference to the "Bulldog" Calf.
A discussion will follow, to be opened by Mr. Leslie Pugh.

Thursday, May 29th.

UROLOGY: at 8.30 P.M.
Annual General Meeting:
Election of Officers and Council for 1924–25.
Pathological Evening:
Members are requested to give early notice to Mr. Girling Ball, 77, Wimpole-street W., of any specimens they wish to show.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos-street, Cavendish-square, W.
FRIDAY, May 30th.—8.40 P.M., Mr. Kenneth Walker: Paper on Epididymitis, preceded by a Demonstration of Clinical Cases, and followed by a Discussion.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, May 26th, to Saturday, May 31st.—CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL. Special intensive course (last week).—LONDON LOCK HOSPITAL. Clinical work daily. Lectures at Dean-street as follows: Mon., 5 P.M. Mr. Gibbs: Antenatal and Postnatal Treatment of Syphilis; Tues., 2.30 P.M., Mr. McDonagh: Microscopical Demonstration, Leucocytozoon Syphilidis; Thurs., 4.30 P.M., Mr. Lawrence Abel: Treatment of Chronic Gonorrhœa in the Male.—MAUDSLEY HOSPITAL. Mon., 3.30 and 5.30 P.M., Dr. Bernard Hart: The Psychoneuroses; Tues., 4.30 P.M., Sir Frederick Mott: Brain Syphilis, its Symptomatology and Treatment; Wed., 2.30 P.M., Dr. Mapother: Demonstration in Clinical Psychiatry.—PRINCE OF WALES'S GENERAL HOSPITAL. Special intensive course in Medicine and Surgery (last week).

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, May 26th.—12 noon, Mr. Simmonds: Demonstration of Fractures. 2 P.M., Mr. Bishop Harman: Eye Dept. 2 P.M., Mr. Simson: Diseases of Women.
TUESDAY.—10 A.M., Dr. Drummond Robinson: Gynæcological Operations. 11 A.M., Mr. Endean: Venereal Diseases. 2 P.M., Dr. Burrell: Medical Out-patients.
WEDNESDAY.—12.15 P.M., Dr. Burnford: Medical Pathology. 2 P.M., Dr. Pernet: Skin Dept. 4.15 P.M., Dr. Owen (Lecture): Infantile Disorders in the First Ten Days of Life.
THURSDAY.—11 A.M., Dr. Archer: Chemical Pathology. 12 noon, Dr. Scott Pinchin: Diseases of the Heart. 4.15 P.M., Mr. Donald Armour (Lecture): Head Injuries.
FRIDAY.—12 noon, Surgical Registrar: Surgical Pathology. 2 P.M., Mr. Sinclair: Surgical Out-patients. 2 P.M., Mr. Banks-Davis: Throat, Nose, and Ear Dept.
SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.
Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M. In-patients, Out-patients, Operations, Special Departments.

ST. JOHN'S HOSPITAL, Leicester-square, W.C.
TUESDAY, May 27th.—5 P.M., Dr. Sequeira: Lupus Erythematosus.
THURSDAY.—5 P.M., Dr. Graham Little: Dermatitis Herpetiformis.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE.

MONDAY, May 26th.—12 noon, Dr. Greenfield: Lecture, Paths of Infection of Central Nervous System. 2 P.M., Dr. Hinds Howell: Out-patient Clinic. 3.30 P.M., Dr. Aldren Turner: Clinical Lecture.

TUESDAY, May 27th.—12 noon, Dr. Walshe: Lecture on Anatomy and Physiology of Nervous System. 2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Grainger Stewart: Lecture, Disseminated Sclerosis.

THURSDAY, May 29th.—12 noon, Dr. Walshe: Lecture on Anatomy and Physiology of Nervous System. 2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Walshe: Lecture, Clinical Disorders of Muscle Tone.

FRIDAY, May 30th.—2 P.M., Dr. Gordon Holmes: Out-patient Clinic. 3.30 P.M., Dr. James Collier: Clinical Lecture.

Applications should be addressed to the Secretary, Medical School, National Hospital for the Paralysed and Epileptic, Queen-square, London, W.C. 1.

J. G. GREENFIELD, Dean.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

(At 4.30 P.M.)

MONDAY, May 26th.—Mr. Aubrey Goodwin: Curettage, its Uses and Abuses.

TUESDAY.—Dr. C. E. Sundell: Nephritis in Children.

WEDNESDAY.—Dr. J. Browning Alexander: Treatment of Gastric and Duodenal Ulcer.

THURSDAY.—Dr. A. J. Whiting: Vagus Effects on the Heart as Met with in Practice.

FRIDAY.—Mr. H. W. Carson: Peritonitis—Treatment of.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, May 29th.—4 P.M., Dr. Thursfield: Acholuric Jaundice.

UNIVERSITY OF LIVERPOOL POST-GRADUATE LECTURES.

(At 3.30 P.M.)

MONDAY, May 26th.—(At the Children's Hospital.) Dr. H. Armstrong: Clinical.

TUESDAY.—(At the Southern Hospital.) Dr. Macalister: Chronic Dyspepsia.

WEDNESDAY.—(At the Northern Hospital). Dr. L. Cunningham: Rheumatic Fever.

THURSDAY.—(At the Stanley Hospital.) Mr. Morrison: Surgical Cases.

FRIDAY.—(At the Royal Infirmary.) Dr. Matthews: Exhibition of Blood Films.

BRISTOL UNIVERSITY POST-GRADUATE DEMONSTRATIONS.

WEDNESDAY, May 28th (at the Hereford General Hospital.)—3.30 P.M., Dr. O. C. M. Davis: Defective Dieting as a Cause of Children's Disorders.

Appointments.

ALEXANDER, T. H. W., M.B., B.Ch. Edin., has been appointed Medical Referee under the Workmen's Compensation Act for Elgin and Nairn.

BOWES, G. K., M.D. Oxf., D.P.H., Asst. Medical Officer, Birmingham.

CAIRD, A. J., M.B., Ch.B. Edin., Hon. Asst. Surgeon to the Cumberland Infirmary.

FALCONER, K., M.B., Ch.B. Glasg., Medical Officer of Health for Drolysden.

LAWSON, MIRIAM A., L.R.C.P., M.R.C.S., Resident Medical Officer, St. Mary's Hospital for Women and Children.

King's College Hospital: EAST, C. F. T., B.M., B.Ch. Oxf., M.R.C.P. Lond., Radcliffe Travelling Fellow of the University of Oxford, Medical Tutor, and Junior Physician on the staff; LIVINGSTONE, J. L., M.B., B.S. Lond., Sambrooke Medical Registrar; PERKINS, A. C. T., M.R.C.S., L.R.C.P. Lond., Second Casualty Officer; TOWNSEND, H. S., M.R.C.S., L.R.C.P. Lond., House Anæsthetist; LANE, C. R., M.B., B.Ch., Resident Asst. Clinical Pathologist; BROCKINGTON, F., M.B., B.S., SMITH, A. B., M.B., B.S., and SHELDON, W. P. H., M.R.C.S., L.R.C.P. Lond., House Physicians; STRANGE, F. O. T., M.R.C.S., L.R.C.P. Lond., SOMMERVILLE, A. C., M.R.C.S., L.R.C.P. Lond., and CONNAN, P., M.R.C.S., L.R.C.P. Lond., House Surgeons; KOHNSTAM, G. L. S., M.R.C.S., L.R.C.P. Lond., House Surgeon and Assistant House Anæsthetist; EDWARDS, H. C., M.B., B.S., House Surgeon to Orthopædic Department; NICHOLSON-SMITH, E. M., M.R.C.S., L.R.C.P. Lond., Obstetric House Surgeon; ACHESON, P. M., M.R.C.S., L.R.C.P. Lond., House Surgeon, Aural and Throat Depts.; CAVE, E. H. P., M.R.C.S., L.R.C.P. Lond., Resident Radiologist; CROSSLEY, J. C., L.D.S., House Surgeon, Dental Department.

Vacancies.

For further information refer to the advertisement columns.

Aden Settlement.—Executive Health O. Rupees 800 per mensem.
Bolingbroke Hospital, Wandsworth Common, S.W.—Hon. Dentist.
Bolton Infirmary and Dispensary.—Res. Surg. O. £250. Two H.S.'s. £150. Asst. H.S. £100.
Brighton, Lady Chichester Hospital.—Res. M.O. £100.
Brighton, Royal Sussex County Hospital.—Hon. Second Electro-Therapeutist.
Bristol, Southmead Hospital.—Second A.M.O. £200.
Buxton, Devonshire Hospital.—Bacteriologist. £400.
Cairo, Egyptian Government School of Medicine.—Prof. of Biology. L.E.900–1140.
Cambridge, Addenbrooke's Hospital.—H.S. £130.
Carlisle, Cumberland Infirmary.—Jun. H.S. £150.
Charing Cross Hospital, W.C.—Asst. S. to Ear, Nose, and Throat Dept.
Cornwall County Council.—Temp. Tub. O. £50 for one month.
Dudley, Guest Hospital.—Asst. H.S. £150.
Edinburgh University.—Lecturer on Diseases of Tropical Climates.
Grimsby and District Hospital.—Jun. H.S. £125.
Heywood Borough.—M.O.H. £800.
Holland County Council, Lincolnshire.—Asst. County M.O. £600.
Hospital for Sick Children, Great Ormond-street, W.C.—H.S. and H.P. Each £50.
Hull Royal Infirmary.—Cas. H.S. £130.
King Edward VII. Sanatorium, Midhurst, Sussex.—Med. Supt. £1000.
Lancashire County Council.—Asst. County M.O. £800.
L.C.C. Mental Hospitals.—Seventh Asst. M.O. £440.
London Hospital Medical College.—Jun. Demonstrator of Physiology.
London Temperance Hospital, Hampstead-road, N.W.—R.M.O. £200.
Manchester, Ancoats Hospital.—H.S. £100.
Manchester, Barnes Convalescent Hospital, Cheadle.—Res. M.O. £250.
Manchester City.—M.O. £632 7s. 8d.
Middlesex Hospital, W.—Physn. to Dept. for Dis. of Nervous System.
National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—Registrar. £200.
North Middlesex Hospital, Edmonton, N.—Asst. M.O. £200.
Oxford, Radcliffe Infirmary and County Hospital.—H.P., H.S., Cas. H.S., and Res. Accoucheur. Each £120.
Preston, Lancs, County Mental Hospital, Whittingham.—Locum Tenens M.O. £8 8s. per week.
Preston Royal Infirmary.—R.S.O. £230. And H.S. £200.
Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Obstet. S.
Queen Mary's Hospital for the East End, Stratford, E.—Hon. Asst. P.
Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Dental S. £300.
Rochester, St. Bartholomew's Hospital.—H.P. £200.
Royal Chest Hospital, City-road, E.C.—P.
Royal Free Hospital, Gray's Inn-road, W.C.—H.P., H.S., Asst. Cas. O., Obstet. H.S., &c. Each £50. Cas. O. £100.
Royal National Orthopædic Hospital, 234, Great Portland-street, W.—Clin. Asst. 100 guineas.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.P. and H.S. Each £100.
St. Bartholomew's Hospital, E.C.—Radiologist.
South London Hospital for Women, Clapham Common, S.W.—Asst. P.
Stirling District Mental Hospital, Larbert.—Third Asst. M.O. £250.
War Memorial Hospital, Enfield, Middlesex.—Hon. Radiologist.
West London Hospital, Hammersmith-road, W.—H.P., H.S., Aural H.S., Res. Cas. O., and Med. Reg. Each £100.
Wigan Infirmary.—Third H.S. £150.
Windsor, King Edward VII. Hospital.—Jun. H.S. £140.

Births, Marriages, and Deaths.

BIRTHS.

GOODE.—On May 13th, at Bootham, York, the wife of Henry Norman Goode, M.C., M.B., F.R.C.S.E., of a son.

MARTIN.—On May 14th, at Westbourne-gardens, W., the wife of E. Kenneth Martin, M.S., F.R.C.S., of Wimpole-street, of a daughter.

RUSHWORTH.—On May 12th, at Orchard Corner, Walton-on-Thames, the wife of Arthur Norman Rushworth, M.R.C.S., L.R.C.P., of a daughter.

SHAW.—On May 14th, at Coronation-street, Barnstaple, Devon, the wife of Simeon Cyril Shaw, F.R.C.S., M.B., B.S., of a son.

MARRIAGES.

FOX—GIBSON.—On April 23rd, at St. Peter Port Parish Church, Guernsey, William Barton Fox, B.A., M.B., B.Ch. (T.C.D.), to Doris Margaret Gibson, M.B., B.Ch. Edin., elder daughter of Dr. and Mrs. E. V. Gibson, Paradis," Grange-road, Guernsey.

DEATHS.

FOULDS.—On May 9th, after an acute illness, Greta Maryanne Foulds, beloved wife of Dr. Francis Henry Foulds, of Severn House, Droitwich, aged 50 years.

MCKINLAY.—On May 17th, at Southsea, suddenly, Deputy Inspector-General Archibald McKinlay, R.N. (retired).

SCOWCROFT.—On May 17th, at St. Ann's Cottage, St. Ann's-road, Cheadle, Cheshire, Walter Scowcroft (late Medical Superintendent of Cheadle Royal, Cheshire), in his seventieth year.

WIDEGREN.—On May 18th, at Grosvenor-place, Matthias W. E. Widegren, M.R.C.S., L.R.C.P., Knight of the Swedish Order of Vasa, aged 62.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

OUR CLOTHES AND HEALTH.

AT a meeting of the Maternal and Child Welfare Group of the Society of Medical Officers of Health held on May 15th, with Dr. H. Scurfield in the chair, Dr. Leonard Hill delivered a lecture, illustrated by lantern slides, on clothing and open-air treatment. The lecturer began by describing the properties of different cloth fibres and showed that in maintaining the warmth of the body the essential factor was not the nature of the fibre but its ability to retain air. This was brought about largely by the style of weaving. Air was a very bad conductor of heat, and the warmth of the body was retained by particles of air trapped in the meshes of the garment. He showed the results of his experiments with his instrument the katathermometer, which proved how the maximum amount of heat was to be retained when cellular clothing was covered on the outside with waterproofed or air-proofed material, thus preventing the warm layers of air from being carried away from the body. This principle was put into practical application in the clothing of airmen and Arctic explorers. With regard to wet clothes, Dr. Hill showed that wool retained the maximum of warmth in the body, as wool fibres when wet did not collapse as cotton and silk did. He made reference to some experiments which had been done at the instigation of the Board of Trade to test the most suitable provision to make for people who might be shipwrecked. The results of these experiments were that the essential factor in preserving life was warmth and that this could best be achieved by putting on some waterproof covering over the ordinary clothes whether these were wet or no. Dr. Hill then went on to show the effect of colour on heat retention. As is well known, white radiates and breaks up heat and light rays which are absorbed by black. He gave illustrations of several interesting experiments which went to prove this. The ideal clothing for tropical wear—as, for example, the wide white flapping garments of the Arabs—was that in which air was allowed to circulate freely throughout the body and which permitted the perspiration to evaporate. He showed that 1 g. of water in evaporating got rid of 600 calories. The white dweller in the tropics required to achieve pigmentation before he was able to withstand the sun's rays. Dr. Hill showed how the short ultra-violet rays of the spectrum had a very small penetrating power, so small indeed that though their bactericidal power was great the presence of one bacterium in front of another was sufficient to protect the lower one. Pigmentation of the skin is caused by the longer ultra-violet rays. Dr. Hill described the experiments which he was carrying out to determine the daily amount of ultra-violet rays in sunlight. His scale showed that half a degree was emanated during 24 hours when the day is cloudy, whereas 10 degrees were given off in the same period when the sun has been shining brightly. The lecturer urged the wider application of heliotherapy, and showed pictures of the work which is being done by Sir Henry Gauvain and Dr. Rollier. Ultra-violet light comes not only from direct sunlight but from the blue sky and is reflected from bright clouds. He hopes that cities will take up the task of estimating the daily amount of ultra-violet light in the atmosphere and will thus come to realise what a tremendous loss is sustained through the pollution of the atmosphere in large cities and will be shamed into coping with the smoke nuisance. Dr. Hill then gave experimental evidence to show the immense value of sunlight in the cure and prevention of rickets. Where, as in this country over large sections of the year sunlight was not very abundant, these curative rays could be obtained by means of the mercury-vapour quartz lamp. Such lamps were now installed in several London and provincial therapeutic centres. Dr. Hill advocated that children should always wear the minimum amount of clothing, and stated that even small babies were far less liable to take cold than was commonly supposed.

PUBLIC HEALTH IN CEYLON.

A REPORT on the affairs of the colony for the year 1922, prepared by Mr. C. H. Collins, second Assistant Colonial Secretary, has just been presented to Parliament. It includes a lengthy section devoted to vital statistics, public health, and kindred matters. From this we gather that, estimated on the basis of the census of March 18th, 1921, the population of the island, exclusive of the military and shipping on Dec. 31st, 1922, was 4,621,147, made up of 9100 Europeans, 30,250 Burghers and Eurasians, 3,087,308 Cingalese, 1,134,083 Tamils, 288,644 Moors, 13,721 Malays, and 26,453 others. The birth-rate of the year was 39·4 per mille and the death-rate 27·8 per mille of the estimated population. The mortality of children under 1 year of age amounted to 33,803, and corresponded to 26·7 per cent. of the total deaths during the year. The death-rate from some of the principal causes per million of the population is given in the subjoined table:—

Pyrexia	4422	Ankylostomiasis	410
Infantile convulsions	3028	Premature birth and congenital defects	363
Diarrhœa	2127	Puerperal septicæmia	338
Pneumonia	1640	Bronchitis	290
Phthisis	681	Enteric fever	119
Dysentery	551	Cancer	101
Influenza	525		
Malaria and malarial cachexia	449		

The deaths attributed to influenza during the year numbered 2395, the lowest total recorded since the pandemic broke out in 1918, when it was 19,092. The deaths from pneumonia, which since the outbreak of the influenza pandemic have been fairly high, amounted to 7479, an increase of 771 over the previous year and of 813 over 1920. But compared with the years 1918 and 1919 the mortality from pneumonia also is considerably less. It is likely that the increase over the previous two years of the deaths from pneumonia is due to a slight recrudescence of influenza in the second and third quarters of the year. The number of deaths from plague registered in the year was 143, of which only 23 were females. It is now nine years since the plague broke out in the island, and within this period there have been only two years—viz., 1915 and 1919—in which the mortality from the disease was less than in this year. As usual, by far the greater number of deaths occurred within the municipality of Colombo. There were 40 deaths registered from small-pox, and 4 from cholera. To accidents and other affections produced by external causes were attributed 1982 deaths; 471 of the accidental deaths were returned as due to fall from trees, and of the number, strange as it may appear, 5 were females. Drowning was ascribed as the cause of death in 413 cases, and deaths from burns numbered 207 (27 being ascribed to the bottle lamp). 167 males and 82 females died from snake-bite. The death-rate per million persons from homicide was 48 and is comparatively high. Suicide accounted for the deaths of 167 males and 65 females. Parangi (framboesia) is still prevalent in many parts but is less common than it was some years ago, the position having been very much improved by the restoration of many village tanks and the establishment of dispensaries. Special efforts have been made of late years to deal with the disease, which is treated with salvarsan in many district hospitals and three special itinerating medical officers have been appointed for work in selected areas. Special mention may be made of the very praiseworthy work of a private medical practitioner who has treated a very large number of parangi patients free in a number of villages in the North-West Province, using drugs supplied by Government with encouraging results. The campaign against ankylostomiasis, carried on conjointly by the Rockefeller Foundation and the Ceylon Government, has been continued during the year, and arrangements were made for training a number of inspectors for work in this department. All parts of Ceylon are well supplied with hospitals and dispensaries, most of which have been provided and are supported by the public funds. The island possesses a lunatic asylum which contained 1097 inmates on Dec. 31st, 1922, and two leper asylums, one at Hendala, which contained 455 patients at the end of the year, and the other at Mantivu with 116 lepers. A home for incurables of 80 beds is administered by a committee of Government officials and representatives of the public. There is a tuberculosis sanatorium at Kandana in the Western Province and 91 other Government hospitals, including a hospital for chronic cases of tuberculosis equipped with modern hospital furniture and surgical appliances. In addition to the hospitals there are 472 central and branch dispensaries, including a central institute in Colombo for tuberculosis cases, this last being fitted up with an X ray apparatus. The owners of estates have provided 64 estate hospitals, which received a rebate on export duty, and 542 estate dispensaries received drugs free from Government to the value of 50 cents per labourer per annum. The general scheme in contemplation for the rebuilding of the Ceylon Medical College remains deferred. The full course of training at the college is five years for the medical students and two years for the apothecary students. A diploma in medicine, surgery, and midwifery (which can be registered in the United Kingdom) is granted to the successful medical students. The apothecary students are employed by the Government after they qualify in the final examination. Colombo possesses a bacteriological institute, a Pasteur institute, a general hospital of 711 beds, an ophthalmic hospital, a lying-in home, a hospital for women and children, and a hospital for infectious diseases. There are special dispensaries at Kandy and Galle for the treatment of eye

diseases. There is a marked variation in climate between the different parts of Ceylon. In the low country, with a mean temperature of the order of 80° F., a noticeable feature is the small range of both temperature and pressure. There is, however, wide divergence between the moist conditions in the south-west of the island, where the average annual rainfall varies from 100 to 200 inches, and the dry zone areas of the north, north-west, and south-east. Altitudes up to 8200 feet occur inland, and there the temperature is cooler and shows a bigger range. There is a corresponding change in vegetation, and the conditions are altogether more akin to those in the temperate zone. The death is recorded with regret of Dr. Alan Kidd, superintendent of the General Hospital, and it is mentioned that early in the year Dr. P. J. Kelly, registrar of the Medical College, was appointed Surgeon-General of British Guiana.

HEALTH CONDITIONS IN SWAZILAND AND THE SEYCHELLES.

Swaziland.

THE census taken in May, 1921, showed that the European population in the Protectorate was 2205, representing an increase of 103·6 per cent. since the 1911 census. The native Bantu population amounted to 110,295, an increase of 5·34 per cent. in the ten years. During 1922 the general health of the territory was fairly good. Small-pox was epidemic in a mild form. The number of deaths from the disease has been small. Vaccination work has been carried out and the bulk of the native population has been successfully vaccinated. There has been very little malaria during the year, and cases of enteric were rare. Syphilis continues to be a troublesome disease amongst the native population, but every effort is being made to deal with it. Only a few cases of influenza—of a mild type—occurred during the year. Out of 148 cases admitted to the hospital there were three deaths; 15,722 out-patients were treated. Swaziland is divided geographically into three longitudinal regions of roughly equal breadth, running from north to south, and known locally as the high, middle, and low or bush veld. The climate of the high veld has been likened to that of the south of France. The air is bracing and invigorating; light frosts are prevalent during the months of June and July. The mean temperature in winter is 57° F. The summer is pleasantly warm. The absolute maximum over a long number of years is 101°, while the mean temperature in summer is 67°. The rainfall is good, the average recorded at Mbabane over 19 years being 50·49 inches. The middle veld is well watered by streams rising in the ranges on the west. Lying as it does some 2000 feet below the mountains, the summer temperature of this area is warm and humid, but in winter is cool and refreshing. The mean temperature in summer is 72° and in winter 62°. Frost at times occurs in the valley streams, but is seldom found elsewhere. The rainfall recorded at Bremersdorp over 20 years averages 34·35 inches. East of and parallel to the middle veld lies the bush veld, about 20 miles in width and running north and south through the whole area of the territory. Many streams come down from the high veld and Drakensburg Range. These streams converge in the bush veld into five rivers. But for these this area is not well watered. The rainfall recorded at Natalie Ranch over eight years averages 26·64 inches. The high veld is free from malaria, which is, however, prevalent in the low veld and in a slight degree in the middle veld during some of the summer months. The malaria is not of a virulent type and is easily avoided by taking the precautions ordinarily considered necessary in any subtropical country.

Seychelles.

The Seychelles Islands are situated between the parallels of latitude 4° and 5° S.; the estimated total number of square miles comprised in the group and in the dependencies is 156¼. The number of islands under the Seychelles Government is 90. Mahé is the largest and most populous, and is distant from Mauritius 934 miles, from Madagascar 600, and from Zanzibar 970 miles. It is mountainous, fertile, and extremely healthy. The total population of the colony on Dec. 31st, 1922, was estimated at 25,176, an increase of 653 since April, 1921. There were 108 marriages during the year, as compared with 119 in the previous 12 months. Births numbered 753, which corresponds to a rate of 30·47 per 1000. The deaths amounted to 344, or 13·92 per 1000. This is the lowest local record for many years and may be attributed to the fact that there were no epidemics of any infectious or contagious disease during the year. In spite of its proximity to the equator, Seychelles is reputed to be one of the most healthy of the British possessions within the tropics. Its climate is mild and equable. The maximum shade temperature rarely exceeds 86° F., while at night the temperature seldom drops below 74°. The rainfall averages about 90 inches, although in some years it has reached 165 inches.

SALFORD'S REMEDIAL PLAYGROUND.

THE annual report of the Greengate Dispensary, Salford, which has been in existence for 40 years, gives some interesting and suggestive information as to what can and has been done for improving the health of its little patients. The total attendances of out-patients was 6419, and 1029 were new cases who had not previously been attending. The opening of an open-air playground has invited new problems of personal care and of administration, and some remarkable results have been obtained. The number of living-in children of pre-school age will be increased to 20. The report of three years' work of the Greengate School is well worthy of attention. In the new open-air shed and playground the method of "individual work" in place of the previous method of formal class teaching has almost been completed. The principles adopted in the physical training of the puny and defective children from the start were the discontinuance of absolute rest in bed and use of splints as curative agents for the weak, ill-grown, and distorted limbs, and the substitution for the whole body, and especially for the development of the arms and the chest, approximate and spontaneous activity, fresh air, good nutrition, happy social surroundings, and full employment for the mind. By these means dormant vital processes and nerve activity were awakened and expressed themselves in a better circulation, ampler range of breathing, and an invigorated muscular response. By natural rather than artificial processes the distorted bones of the rickety children grew into their proper shape as part of a genuine process of healthy vigour of body and mind alike. The results were remarkable and the success is graphically attested by the series of photographs, which might well be labelled "before" and "after," in the report, and by the charts illustrating the attainment of normal growth in height and weight by rickety and deformed children under favourable circumstances. Dr. A. A. Mumford puts the matter tersely:—Away with splints and lying in bed, give the air and sun a chance, aided by good food and exercise and happy occupation for the mind. This is the basis of the wonderful results attained in the "remedial playground" situated in the midst of a dense slum area. The results achieved in this little school seem not far short of miraculous. The development begins almost at once, the children literally begin to live.

MOTHERCRAFT.

ANY normal woman who can produce a baby can nurse one. This is the faith insisted on in the section on lactation of an admirable little manual[1] by the matron of the Mothercraft Training Society, and is justified by the excellent results obtained at the Trebovir-road Clinic, which is its headquarters. Miss Liddiard discusses seriatim the difficulties that are met with from time to time in breast-feeding, and shows that they can nearly always be overcome. The teaching given with regard to the induction, management, and re-establishment of lactation is clear and uncompromising. The principles of artificial feeding, with hints on weaning and feeding after nine months, are also discussed. The little book is, however, more than a survey of feeding problems. It is an excellent summary of the whole science of mothercraft, and should be of considerable value to young and expectant mothers. It is really an epitome of the teaching given at the Trebovir-road clinic, for the benefit of those who are unable personally to attend the courses of lectures there. There are two or three useful chapters on the expectant mother and the necessary preparations for the advent of the baby; the care of premature babies and the home treatment of various small ailments are also dealt with, the book ending with a chapter of simple recipes. In an introduction to the volume Dr. J. S. Fairbairn points out that it is on the preventive side of the subject that emphasis is chiefly laid by the author, and rightly so, since "prevention is the vitalising force in present-day medicine."

OPENING OF A NEW L.C.C. MENTAL HOSPITAL.

THE Minister of Health will perform the opening ceremony at West Park Mental Hospital, Epsom, on Friday, June 20th, at 3 P.M. This is the eleventh mental hospital under the administration of the London County Council, and is planned to provide a detached building for each class of patient. The hospital as now built will provide accommodation for 1732 patients, and ultimately the completed building will contain 2096 patients.

Messrs. Chas. Hearson & Co., Ltd., are showing a complete selection of bacteriological, pathological, physiological, chemical, and research apparatus in the Spratt's Patent Pavilion near the British Government Building at the Wembley Exhibition.

[1] The Mothercraft Manual. By Mabel Liddiard. London: J. and A. Churchill. 1924. Pp. 175. Price 3s. 6d.